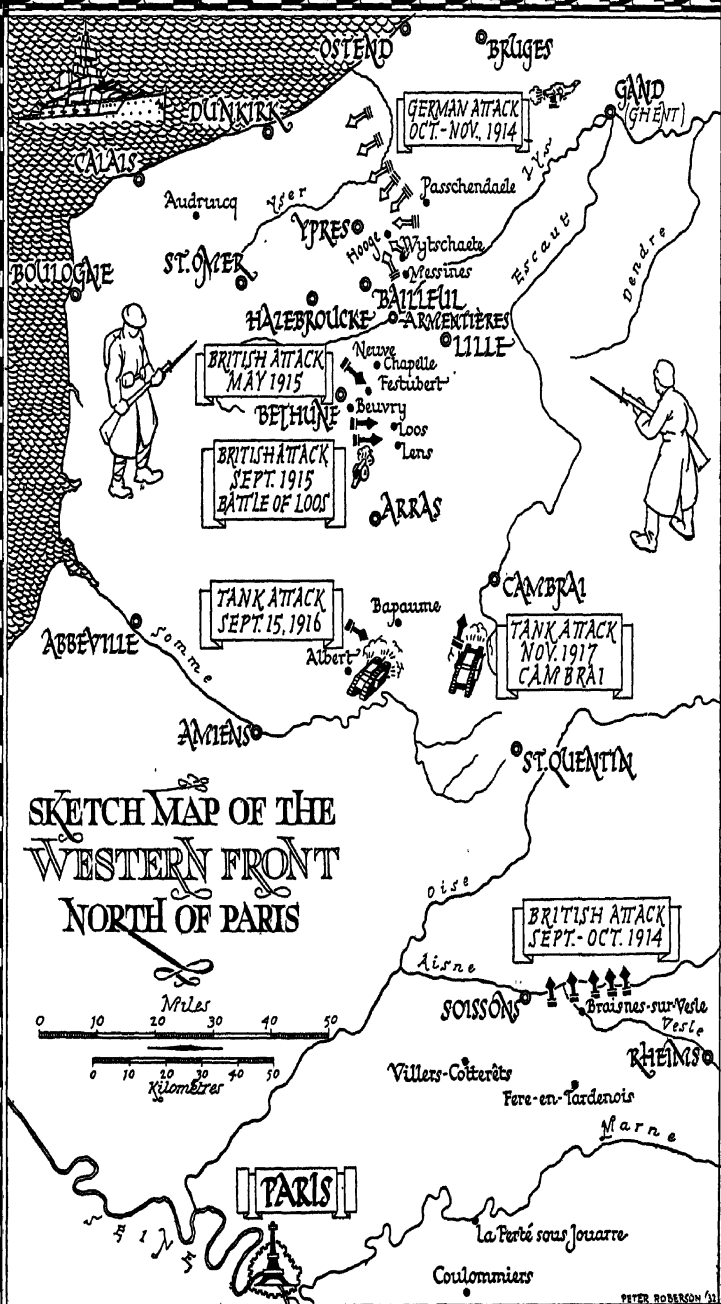


SKETCH MAP OF THE WESTERN FRONT NORTH OF PARIS



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EYEWITNESS

By the same Author

THE DEFENCE OF DUFFER'S DRIFT, under the pseudonym of BACKSIGHT-FORETHOUGHT.

THE GREEN CURVE, under the pseudonym of OLE LUK-OIE.

THE GREAT TAB DOPE, under the pseudonym of OLE LUK-OIE.

EYEWITNESS'S NARRATIVE OF THE WAR, SEPTEMBER 1914 TO MARCH 1915.

A YEAR AGO, FROM APRIL 1915 TO JULY 1915.

Translations

THE TRUTH ABOUT PORT ARTHUR, by E. K. NOJINE, in collaboration with the late Lieutenant-Colonel A. B. LINDSAY.

THE RUSSIAN ARMY AND THE JAPANESE WAR, by General KUROPATKIN, in collaboration with the late Lieutenant-Colonel A. B. LINDSAY.

KING ALBERT IN THE GREAT WAR, by Lieutenant-General GALET.



W. A. P. K.

Ed. P. K.

EYEWITNESS

BEING PERSONAL REMINISCENCES OF
CERTAIN PHASES OF THE GREAT WAR,
INCLUDING THE GENESIS OF THE TANK

BY MAJOR-GENERAL

SIR ERNEST D. SWINTON

K.B.E., C.B., D.S.O., R.E. (Retired)

(Ole Luk-Oie)

CHICHELE PROFESSOR OF MILITARY HISTORY

FELLOW OF ALL SOULS COLLEGE, OXFORD

LONDON

HODDER AND STOUGHTON LIMITED

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●

TO THE INFANTRY,
WHO DURING THE GREAT WAR BORE THE HEAVIEST
BURDEN; SO OFTEN HAD TO ATTEMPT THE IMPOSSIBLE;
AND NOT INFREQUENTLY ACHIEVED IT.

TO THE NEW ARM,
WHICH WAS CONCEIVED AND CREATED TO SAVE THE
LIVES OF ITS UNPROTECTED BRETHREN ON FOOT;
TOOK THE FIELD AS THE HEAVY SECTION, MACHINE
GUN CORPS; CARRIED ON THIS HIGH DUTY AS THE
TANK CORPS; AND REVOLUTIONIZED THE TACTICS OF
LAND WARFARE.

TO THE WORKERS IN SHOP AND FACTORY,
WHO BY THEIR SKILL AND LABOUR FORGED THE
NEW WEAPON AND KEPT ITS SECRET.

●

DER AUGENZEUGE

*Er ist der Mann, der niemals flieht,
Er ist der Mann, der alles sieht,
Was in dem Kriegsgebiet geschieht—
Der Augenzeuge.*

*Denn er kommt stets zur rechten Zeit,
Dort wo am heftigsten der Streit,
Und sieht die kleinste Kleinigkeit—
Der Augenzeuge.*

*Er kennt den kleinsten Korporal,
Er kennt den grössten General,
Und was er weiss ist kolossal—
Der Augenzeuge.*

*Er ist bei jeder Heldentat
Und zwischen Bombe und Granat
Schreibt akkurat sein Referat—
Der Augenzeuge.*

*Beschiesst man eine Kathedral,
Dann steht er just in dem Portal
Und schreibt in seinem Kriegsjournal—
Der Augenzeuge.*

*Wird wo ein Dampfer torpediert,
Ein Sanitätszug bombardiert,
Dann sitzt er drin und referiert—
Der Augenzeuge.*

*So fliegt er um das Erdenrund
Von Front zu Front, zu jeder Stund,
Wird nie verwund't und bleibt gesund—
Der Augenzeuge.*

*So lange doch ein dummer Wicht
Liest den berühmten Kriegsbericht,
Bleibt unverletzt und stirbt noch nicht—
Der Augenzeuge.*

(1915. Source unknown.)

THE EYEWITNESS

He is the man who never flees,
He is the man who all things sees,
And braves the battle and the breeze—
Eyewitness.

Where'er the struggle waxes hot,
He's there at once, right on the spot,
And "scoops" the news—the blessed lot—
Eyewitness.

Intimate of N.C.O.'s,
Pal of Generalissimos,
All there is to know he knows—
Eyewitness.

He's "in" at every gallant deed,
To shot and shell he pays no heed,
But writes his circumstantial screed—
Eyewitness.

Cathedrals may be shelled to bits,
Within the porch he calmly sits,
Composing stuff to give you fits—
Eyewitness.

Torpedo strikes a steamer square,
Red-cross train is blown in air,
He'll be on board to see all's fair—
Eyewitness.

From front to front he ever speeds,
Unscathed around the world proceeds,
And first-aid dressing never needs—
Eyewitness.

And while there's left one single guy
To swallow his recurring lie,
He'll carry on and never die—
Eyewitness.

(Free translation by E. D. S.)

FOREWORD

TO recall events years after their occurrence is to attempt to revive dimmed impressions and to fill in outlines which are blurred. But the lapse of time gives perspective, heals wounds, tempers judgment. This reflection and the belief that emotion is best remembered in tranquillity encourage me to embark upon what, in spite of great misgiving, I now undertake.

This is a collection of personal reminiscences of certain phases of the Great War. I write of things I was privileged to see, to hear, to know, and to feel. Some were important: many were trivial: but all were actual. I do not put forward a history of that period. Nor do I aspire to offer a picture of the misery, squalor, injustice, and foulness, which, inseparable from an exhibition of massed brute force, are not its only manifestations.

Though personally I was fortunate in escaping the hardships and prolonged mental and physical agony from which so many suffered, I was not insensitive to these things. Neither surprised nor dismayed to find war horrible, I do not call upon High Heaven to witness my disillusionment, nor do I indulge overmuch in introspective analysis of my own emotions or reactions. To me, against this overwhelming background of mortal anguish, the minor picturesque features, about which some have rhapsodized, made but slight appeal, for in my opinion they counted but little in the scheme of things.

If, beyond admiration and gratitude for what we

achieved in spite of handicaps and errors, there be any distinct sentiment of which I am conscious running through what I write, it is a protest—which at times becomes explicit, but never, I hope, strident—against the rigid non-receptivity and complacent omniscience so frequently manifested by established authority, the doctrinaire and the pseudo-Brahmin. These traits are by no means peculiar to our nation. Nor are they confined to the military profession. But, during the years 1914–1918, when we all had to deal with things undreamt of in our pre-War philosophy, they had an exceptional opportunity to exhibit themselves in the military hierarchy, which had to cope at first-hand with new elemental facts and with fluid and unprecedented conditions. If any consistent purpose inspired my own actions or suggestions, it was in almost every instance concerned with the moral factor and with the exploitation of that elusive, and in war most powerful, element—surprise.

This book is called *Eyewitness* because that unofficial name, given me by the newspapers during the first months of the War, became familiar to many, and serves to identify me through the most widely known activity with which I was associated. But it is not confined to recollections of the time when I acted as Official Correspondent with the British Expeditionary Force in France.

Many pages are given up to two outstanding features of the military operations on land—the devastating employment of the machine gun by the Germans, and the British reply in the creation of the Tank. I devote much space to the latter without apology, because as its originator I was intimately connected with it from the beginning ; because that beginning, at first deliberately shrouded in secrecy, has never yet been fully disclosed ; and because this weapon played a part in the War far greater than has been generally realized, or, at all events, admitted, by our own leaders. No

enlightenment on the subject is to be obtained from the published works of the two Chiefs of the Imperial General Staff who held office during the early days of the New Arm. On the Continent, on the other hand, its importance and influence have been more widely recognized. I quote two opinions.

Monsieur Jean de Pierrefeu, in discussing the "Bankruptcy of the Military Art", writes:

*"Une seule idée pratique jaillit un jour dans je ne sais quel cerveau—car qui pourrait dire que celui-là qui s'en félicite aujourd'hui en est bien l'unique auteur?—une seule idée, dis-je, à peine neuve, mais étroitement adaptée à son objet, le char d'assaut, et la victoire en sortira comme Pallas de la tête de Zeus."*¹

A German military historian, General von Zwehl, states:

*"Somit halte ich dafür, dass uns nicht das Genie des Marschalls Foch geschlagen hat, sondern der 'General Tank,' d. i. eine neue Kriegsmaschine, in Verbindung mit der ausgedehnten amerikanischen Unterstützung."*²

A further reason why I concentrate on this subject is because it was for so long the pivot of all my thoughts and goal of my hopes. Moreover, interest in it has recently been revived by the proposal to abolish

¹ *Plutarque a menti*, p. 197 [1923]. Monsieur de Pierrefeu held a position during the whole War at French General Headquarters corresponding to that of "Eyewitness" at British G.H.Q.

"A single practical idea flashed into somebody's brain one day—I do not know whose, for one cannot say that the man who is being congratulated on it nowadays was really the sole inventor—one single idea, I say, scarcely new, but nicely adapted to its object—the Tank. And from that was to come victory as Pallas came from the head of Zeus."

² General der Infanterie A. D. H. von Zwehl, *Die Schlachten im Sommer, 1918, an der Westfront*: "And therefore I consider that we were not beaten by the genius of Marshal Foch, but by 'General Tank,' in other words, a new weapon of war, in conjunction with the widespread reinforcement of the Americans."

Tanks by international agreement in order to render a war of aggression more difficult. In this book there is no speculation as to the future ; but it shows that, whatever the developments of this weapon have been since "Mother" first crawled about in the primeval slime of 1916, and whatever its present potentialities, one of its main purposes originally was the saving of life.

Since most of my duties at the War Committee and War Cabinet were of too confidential a nature to be divulged, the continuity of my narrative is perforce broken. Individuals with whom I came in contact during the period covered by these pages are mentioned only in so far as they fit naturally into the picture. I give no list of the names of those to whose help I owed so much, of those with whom I was associated, nor those for whose actions and character I had and still have the most profound admiration. Any attempt to do this would of necessity be incomplete and invidious. But to the many friends who have assisted me with information and wise counsel in the preparation of this book I tender my sincere thanks.

My letters and diaries were of the baldest description, for, apart from the fact that I had no time for the elaborate daily recording of reflections and doings, I felt it incumbent on me to respect the need for secrecy, and to trust but little to paper. Of adventures there are none ; but perhaps this non-technical personal narrative—disconnected as it must necessarily be—may help to throw fresh light on certain aspects of the most stupendous effort ever made by our race.

E. D. SWINTON.

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EYEWITNESS

PROLOGUE

“DAS PANTHER TIER VON AGADIR. . . .”

[July, 1911]

ON the morning of the 9th July, 1911, the inward-bound *Norddeutscher Lloyd* boat *Der Grosse Kurfürst* steamed slowly up Spithead past one of the little chequered, cheese-box forts glistening in the sunlight. Two passengers were leaning against the rail of the boat-deck, deep in conversation, when a voice broke in:

“Have you heard the news? The *Panther* is at Agadir!”

Turning to me, Conan Doyle—for he and I were the passengers in question—said:

“Yes, it does look fishy, I admit. There may after all be something in what you say; but personally I don’t think you’re right.”

* * * * *

The subject of our conversation had been Anglo-German relations, and it had arisen from the fact that we were both taking part in the *Prinz Heinrich Automobilfahrt*, an Anglo-German motor tour being carried out by fifty car-owning members of the Imperial Automobile Club of Berlin and an equal number of the Royal Automobile Club of London. This was a kind of friendly reliability trial, or, as the Germans put it, “A Gentleman’s Tour,” which had been organized that summer under the patronage of Prince Henry of Prussia.

Each car carried as an umpire a naval or military officer of the opposite nationality, whose duty it was to see that the rules of the competition were observed and to allot marks. Conan Doyle was one of the car-owners. I was an umpire.

Our itinerary was from Homburg—whence we had started on the 4th July—up through Germany to Bremerhaven, then via Southampton and the East Coast to Edinburgh, and back by the West Coast to London.

* * * * *

On the previous night the umpires had all dined together, British and German seated alternately, the Prince being at the head of one table, and the late General "Jimmie" Grierson¹—the senior British umpire—at the head of the other. This had been by desire of Prince Henry, who wished to inculcate a spirit of camaraderie between the Fighting Services of the two nations; and we had been not a little amused at the manner in which the civilian car-owners and their friends—who in reality were the backbone of the whole thing—had been unceremoniously banished to the side tables. Charming and friendly as Prince Henry was, his obvious effort to foster pleasant relations was not altogether successful. The British and Prussians found little in common.

Conan Doyle, always a keen advocate of the promotion of good feeling between the nations, had been much distressed during the four days of the tour by the mutual lack of cordiality evinced by the members of the party. This had been especially evident the previous night.

As we stood on deck, he had expressed himself on

¹ The late Lieutenant-General Sir J. M. Grierson, K.C.B., C.V.O., C.M.G., A.D.C.-Gen., who died on 17th August, 1914, when commanding the II Corps of the British Expeditionary Force in France.

this subject strongly and at length. He had insisted that "our cousins" were making a genuine attempt to be friendly and thought that it would be disastrous if their well-meant advances should be rebuffed by any aloofness on our part. He feared that there was some danger of this happening because of the tendency of Service people to be prejudiced and unnecessarily reserved.

While admitting that there might be a certain amount of truth in what he said, I had pointed out that we soldiers were not entirely ignorant of these same cousins of ours, and, though we tried not to show it, were suspicious of their motives; that the Germans—particularly the Prussians—were not noted for their innate courtesy or kindness of heart, whatever their other good points might be; and that if the tour had in fact been organized for the purpose of promoting an entente, it had failed so far as we were concerned. Our natural inclination was to inquire the cause of such a sudden rapprochement and to wonder whether it were not a cloak for some ulterior motive of a less agreeable kind. I had even quoted a pertinent line of Virgil—incidentally the only one I remembered—"Timeo Danaos et dona ferentes."

The news we had just received came as a dramatic confirmation of my argument. And during the remainder of the tour I found no reason to modify my general outlook.

* * * * *

The creator of Sherlock Holmes was not alone in his opinions; and I have quoted this incident to show the conflicting impressions held in this country in regard to Germany.¹

This was the year of Agadir, of the coal strike,

¹ In 1912, after the appearance of General Friedrich von Bernhardi's sinister and illuminative book, *Germany and the Next War*, Conan Doyle's views changed considerably.

of the railway strike, and of Mr. Lloyd George's calculated and effective warning at the Guildhall banquet, which pricked the German *ballon d'essai* and possibly helped to postpone the world cataclysm.

The Sensitized Plate

[1900-1914]

FOR reasons given in the foreword the main feature of a large portion of this book is an account of the creation of the Tank. A certain amount has been written of the part played by this weapon after it had come into being¹; but the complete story of the initial difficulties of its birth and growth has not been told.² Few will now deny that the Arm into which it has developed has become a very powerful factor in warfare. It must be of interest, therefore, to trace the steps of its early history.

So far as I was concerned in this growth, the conception of the Tank was the direct result of the association of a particular piece of knowledge with a particular frame of mind. This frame of mind was a

¹ See *Tanks in the Great War, 1914-1918*, by Brevet-Colonel J. F. C. Fuller, D.S.O.; *The Tank in Action*, by Captain D. G. Browne, M.C.; *The Tank Corps*, by Major Clough Williams-Ellis, M.C., and A. Williams-Ellis; *Life in a Tank*, by Captain Richard Haigh, M.C.; *The World Crisis*, by the Right Hon. Winston S. Churchill, C.H., M.P.; and *Tanks 1914-1918*; *The Log Book of a Pioneer*, by Lieutenant-Colonel Sir Albert Stern, K.B.E., C.M.G.

² For accounts of this period written from other points of view see *The World Crisis* and *Tanks 1914-1918*. See also the evidence given before the Royal Commission on Awards to Inventors held in 1919, and at the hearing of the Petition of Right of Captain B. J. F. Bentley before the High Court of Justice in November, 1925.

mild form of obsession which had come upon me years before the Great War and had been intensified shortly before it broke out. For want of a better description it may be called a machine gun complex.

* * * * *

I can trace the exact moment which gave rise to this complex, though at first sight the occasion might appear to have been one which should have had a contrary effect. It was during the Boer War. The night of the 13th June, 1900, had been bitterly cold; and at dawn the water in the bottles carried by many of the British troops holding the post at Virginia Siding, on the Zand River, was frozen solid. As the sickly light began to swallow up the slate-coloured gloom of night we heard the distant reports of Mausers, and two or three of our mounted infantry patrol came galloping in over the veld, silhouetted purple against the saffron sky. One man, shot through the stomach, fell off his horse as he reached the advanced trenches in which we had been lying on the *qui vive* all night. Rifle-shots rang out from every side. It was the attack we were expecting. A large commando, with the usual Boer tactics, had surrounded the British force which was rebuilding and guarding the railway bridge at this place, and opened fire at dawn. The Boers hoped to surprise us in camp in the open, capture the whole force and destroy the bridge. Such incidents had been only too frequent. But this time they were themselves surprised. Instead of being able to shoot from concealed positions into the careless and sleeping *rooineks*, they found an alert garrison in well-hidden trenches and distributed along the deep bed of the river. After wasting much ammunition on our empty tents—which had been left standing—they accepted defeat and withdrew.

In itself this action was a minor affair, the number of British engaged amounting to four hundred of the

Railway Pioneer Regiment—an irregular unit raised in South Africa—to which I belonged, and an equal number of the 3rd Battalion The King's Own [Royal Lancaster Regiment]. But it was not a "regrettable" incident, being the first occasion for some time on which an attack on an isolated British force had been repulsed. And its significance was great and its repercussions were far-reaching. Indeed, if the Boers had been successful, it would have meant the severance of the railway, the life-line of Lord Roberts's main army in the Transvaal, for a sufficiently long time to have had most serious effects on the whole campaign.

* * * * *

After the fighting was over another aspect of warfare showed itself, which perhaps excuses a slight digression. In front of some of our advanced trenches, where the enemy had been surprised at short range, lay a few of their dead; and my horror may be imagined when I found the militiamen crowding round the dead Boers, cutting the buttons off their clothing as mascots! It must be remembered that in 1899 the sight of dead bodies was not so common as it became during the Great War. And I could to a certain extent understand the morbid curiosity of these men from the mills, few of whom had ever been outside England before. But this souvenir craze was another matter. I placed sentries round the ground where the bodies lay, intending that no one should be allowed on it. On second thoughts, however, I decided to turn the affair to good account. In case of a further attack, one of the pressing needs of the moment was to clear our field of fire, which we had not had time to do. The idea occurred to me of getting the lads fra' Lancashire to do this. So orders were given that no man was to pass a certain line and have a peep until he had done his allotted

task of cutting down so many square yards of scrub. The necessary clearance was quickly finished with satisfaction to all parties.¹

* * * * *

The relevant point of this story lies in the fact that our infantry had with them one machine gun. I had always been interested in machine guns, and this was the first occasion on which I had had the opportunity of seeing one used in earnest. It was with the greatest keenness, therefore, that I looked forward to a demonstration of its powers, though the Boer tactics were not such as to give much opening for its effective employment. Eagerly I watched our ewe lamb being manned in its emplacement and awaited its murderous chatter. Instead, I heard one or two shots—and no more. To my disappointment the gun remained silent, having been temporarily put out of action by the freezing of its water-jacket.

* * * * *

A slowness to discern the basic value of something new when it is in an immature state of evolution and exhibits faults which are not inherent is deeply ingrained in all of us. From this the machine gun long suffered.

The failure, of which I was a witness on the 14th June, 1900; though not uncommon, was obviously no criterion of the potential worth of this weapon, and did not justify its general condemnation. It certainly did not shake my own belief in its true value. On the contrary, my attention having been

¹ It was not upon this occasion that a war correspondent, taking shelter down a well during the fight, kept popping his head up between the shell-bursts and encouraging the garrison with—"Stick it out, boys! England shall ring with this!"—before he ducked down again. No representative of the Press was present during the action at Virginia Siding, which is probably the reason why this "method of barbarism" has never been made public!

drawn to it by this personal experience, the superficial and illogical nature of much of the criticism directed at it, and the fact that the machine gun remained unpopular for long after the South African War, largely on account of infantile but remediable weaknesses, served only to quicken my interest in its possibilities.

Outside our Schools of Musketry a certain number of enthusiasts preached the gospel, but their words fell mainly on deaf ears. At that time all interest was centred on the intensive training of our infantry in musketry, which with us was brought to a pitch unattained by the Army of any other nation, and indeed served us well in 1914.¹

Except by a few specialists—looked upon as cranks—the machine gun was for long belittled. Few battalion commanders detailed their best officers and men to machine gun duty, which in some units was regarded as a fatigue. Nor was there any definite policy in regard to its employment on manœuvres. Among the many epigrammatic slogans, which though true, are so often misused to stifle thought, was that summing up the machine gun as a “weapon of opportunity.” This it is. And the Great War was one long opportunity.

* * * * *

In 1908 I was asked by one of the enthusiasts, Captain Applin of the 14th Hussars², to edit a handbook he was preparing on machine-gun tactics. Owing to pressure of other work I was unable to do this, but I had the privilege of reading what an expert with practical experience and vision had to say on

¹ Among other champions of the machine gun were Generals Smith-Dorrien, Monro, and Congreve.

² Now Lieutenant-Colonel R. V. K. Applin, D.S.O., M.P. Many of the recommendations made in this book—*Machine-Gun Tactics* [first published in 1909]—were adopted during the Great War.

the subject; and it confirmed my own non-expert views.

From 1910 to 1913 I was engaged in the compilation of the two last volumes of the *Official Naval and Military History of the Russo-Japanese War*. That campaign furnished two outstanding lessons in the tactical and technical side of warfare. The first was the possibility of employing very heavy ordnance in both siege and field operations, for the Japanese used 11-inch howitzers at the siege of Port Arthur and subsequently at the Battle of Mukden. The second was the immense power in defence of the machine-gun. This was proved both at Port Arthur, and in the field—markedly at Hei-kou-tai (San-de-Pu). The record of the operations confirmed the arguments of the machine gun enthusiasts.

Attention was drawn to these two points by the British attachés with the combatants, and presumably by the representatives of the other neutral Powers. In the matter of heavy ordnance, the Germans and Austrians took the lesson to heart and produced the monster howitzers of 42-cm. calibre, which overthrew Liège, Namur, Antwerp and Maubeuge, and startled the world. As regards machine guns, the Germans took note of what happened in Manchuria, and concentrated on their use. Our General Staff also made efforts to obtain money to increase our armaments both in howitzers and machine guns. But at that time a demand for war material was the last thing to receive financial sanction, and the proposed increase was not pressed.

* * * * *

In 1913 my latent interest in these weapons was further aroused by a curious experience related to me by a friend.¹ An expert in ballistics, and holding an important position in the motor industry, this

¹ Captain (now Major) T. G. Tulloch, late Royal Artillery.

officer associated with some of the leading men in England and Germany whose interests lay in the same direction. When in 1913 he had occasion to visit Berlin, one of his friends prominent in the British armament industry asked him, if possible, to make discreet inquiries into the question of the production of machine guns by the Germans.

The German Army was armed with the Vickers-Maxim gun—practically the same as the British Vickers—which was made in Germany under licence from the British Company holding the patent rights. The situation was obscure because the periodical statement previously submitted by the licensees had not been presented, and no royalties had been paid, for nearly two years.

Tulloch willingly undertook this mission, and whilst in Berlin made the necessary inquiries from those concerned. The reply, courteous but firm, was that circumstances had arisen which had prevented the submission of any statement.

This did not at all satisfy the questioner. He strongly suspected that the "circumstances" were orders from the German War Office. If this were correct, the only rational explanation was that the Great General Staff did not wish to make public the number of machine guns manufactured during the previous two years lest it should reveal how rapidly the Germans were arming and what importance they attached to this weapon. He did not press the point. Later his own business took him to the wonderfully equipped experimental small-arms range belonging to the combine engaged in the manufacture of machine guns at Koenigswusterhausen, a short distance from Berlin, where certain experiments were being carried out on his behalf with the pointed rifle-bullet.

The official deputed to accompany him was a retired colonel, a former member of the *Prüfungskommission* at Spandau. After a morning at the range, the two

officers adjourned for luncheon. The Englishman, as host, bade the landlord do his best. The mellowing of the colonel was rapid; and at the psychological moment an apparently casual question was put to him as to the non-presentation of the accounts for the machine guns manufactured under licence: "Is it because so few are being made that the total amount of money involved is negligible?"

The fly was well chosen and skilfully cast. Here was an aspersion on the importance and achievements of the German Company. Glancing round to make certain that he was not overheard, its representative answered with conscious pride: "*Schon haben wir acht und dreissig tauzend gemacht!*" (We have already made thirty-eight thousand.)

So far so good: but my friend wished to confirm his suspicions as to causes. Appreciating that the other had already burned his boats, he boldly asserted: "Then, of course, *der grosse Generalstab* has forbidden any statement to be rendered?"

To this came the unhesitating reply, "*Gewiss.*" (Certainly.)

To Tulloch the cat appeared to be out of the bag! On his return he reported what he had heard to me and to the Secretary of the Committee of Imperial Defence—Captain Hankey¹—whose assistant I was. He was referred to the War Office. Here he found the Intelligence Department under no delusion as to the number of machine guns in the German Army, though not so well posted as to the reserve of these weapons being accumulated. His report was received with some scepticism; but he was told that our official representatives in Germany would be asked to check his information. Shortly afterwards he was informed that nothing could be discovered to confirm his statement.

He was far from satisfied. He had not forgotten

¹ Now Colonel Sir Maurice Hankey, G.C.B., G.C.M.G.

the story of one of our military attachés who, unable to distinguish between the French words *cuir* and *cuivre*, had reported that the Power to which he was accredited was about to introduce a leather-covered bullet!

* * * * *

As a matter of fact the exact number of machine guns that the Germans had in reserve in 1914 was never discovered even by the Allied Disarmament Mission in control in Germany after the War.¹ That quoted above was far greater than was necessary to equip the whole of their reserve and second-line formations on the same scale as the Active Army, and was a great exaggeration. The important point so far as I was concerned was that I then accepted it as correct, having no reason to doubt its accuracy. If the news brought back from Berlin were only partly true there was sufficient reason for grave misgiving.

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The particular piece of knowledge to which I referred at the beginning of the chapter was that of the existence of a certain agricultural machine. In July, 1914, I received a letter from a Mr. Marriott, a mining engineer whom I had met in South Africa during the Boer War.² He had taken a great interest in military matters since then, and had more than once informed me of technical developments in civil life which might be of use to the Army. He now wrote that he had for some time been trying to find the best system of

¹ It is interesting to note that so late as 1919 the official American view was that the Germans had amassed a large reserve of machine guns before the War. In the report of Mr. Benedict Crowell, the Assistant Secretary of War and Director of Munitions, it is stated that according to an early report they had 50,000 Maxim guns at the beginning of hostilities. *America's Munitions*, 1917-1918. Washington, 1919, p. 160.

² Mr. Hugh F. Marriott, M.Inst.C.E., M.Inst.M.M., etc.

transportation for mining ventures being developed in remote regions. After having considered light railways, the mono-rail, aerial tramways, etc., he had in the course of his search found in Antwerp an agricultural machine of American manufacture called the Holt Caterpillar Tractor, which had surprising powers of crossing country. He thought that the Army might be interested in this machine for purposes of transport. The details he gave showed that it could traverse narrow trenches or holes in the ground and was so powerful that it could drag a five-furrow plough, set at the maximum depth, through marshy soil.

The information seemed of value, and I brought it to the notice of the Secretary of the Committee of Imperial Defence. As I had access to all Government Departments, I also passed it on to the Directors of Artillery and of Transport at the War Office, and to the late Rear-Admiral Sir Edmond Slade, the Government representative on the Board of the Anglo-Persian Oil Company, which was then struggling with the task of conveying heavy pipes across desert country. This was done purely with a view to transport efficiency, and not with any suspicion of war being so near. These officials were mildly interested; and there the thing remained.

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This knowledge lay dormant in my mind until ten weeks after the War had broken out. When it did recur to me it was as if a ray of light had struck a sensitized plate. The picture that was subsequently developed remains to be described.

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Railways and Journalism

[August–September, 1914]

FOR just over a year before the 4th August, 1914, I was an assistant secretary of the Committee of Imperial Defence at 2 Whitehall Gardens. Ever since it had been created by Mr. Balfour in 1904 this body had been carrying on its allotted work quietly and efficiently. It had been setting the national house in order in the special province of defence, and had been making such arrangements that no portion or department of the Government organization should be caught unawares in the event of war.

One aspect of the period immediately following the declaration of war which impressed me particularly was the ease and celerity with which the whole quiescent machine was flung into gear—the machine in this case being our dear, peace-loving, slow-moving and blind country. And struck as I was by this transformation, in the hurly-burly of the moment, when our whole world was upset, on looking back I marvel still more. Much has been said about the speed and efficiency of the mobilization and transport of the Expeditionary Force, of the readiness of the Fleet, and of the executive actions which enabled us to play our part promptly at the last moment. Every word of praise is deserved. But little has been told of what enabled the nation at once to spring to arms from the very depth of its pacific complacency. There is good

reason for this, since every action, every thought, taken in preparation for the moment, should it ever arrive, was in the highest degree secret. In this case the will, the resources, and the armed might of the British nation were the engine and car. The invasion of Belgium was the starter. The non-reply to our ultimatum was the clutch. And the gear-box was a quarto-sized book, bound in red and blue leather, called the War Book.

One of my earliest recollections of that home of mystery—the Committee of Imperial Defence [usually known as the C.I.D.]—was of a little room next that of the Secretary. In it was seated an officer surrounded by a mass of typed and printed slips, with a pot of paste within reach. Much of his time was spent in visiting various departmental officials, usually to discuss some procedure to be followed in the event of war. The outcome of these visits, reports of conversations, memoranda and minutes were all carefully incorporated in the War Book, which was being continually revised and brought up to date.

The book owed its origin to the discoveries made about 1908 by our newly established counter-espionage organization as to the German activities in this country. These naturally came to the knowledge of Captain Hankey, then Assistant Secretary to the Committee of Imperial Defence under Rear-Admiral Sir Charles Ottley.¹ By 1909 he was greatly disturbed by signs of German preparations on the one hand, and our own unreadiness on the other. He realized that though we had armed forces, their actual employment would entail much thought and pre-arrangement outside the Fighting Services, for which no provision had been made. To make such provision would have necessitated the elaboration in great detail of the steps to be taken by different branches of the Government, for, contrary to civilian ideas, all departments would

¹ Rear-Admiral Sir Charles Ottley, K.C.B.

have to play their part. The state of incredulity of both government and nation as to the possibility of our being engaged in an European war was such that a comprehensive exploration of ways and means would not have been contemplated for a moment. War was "unthinkable."

Yet, though the supposition was that the Navy was always ready, and that the organization of a military expeditionary force was proceeding on practical lines, to those who knew the situation was full of danger. One—if not the sole—Minister alive to this was Mr. Haldane,¹ who all along did everything to help in this side of our preparatory measures, which was not less important because it was secret. If we had then been suddenly plunged into a great war—as we were in 1914—we should immediately have been thrown into chaos. Strangely enough, or perhaps naturally, in view of our altruistic predilections, our respect for national probity, justice, fair play, and such-like considerations, we were about that time exercised as to the nature and extent of the warning that should be given in case of war to enemy vessels which happened to be lying in our ports; and a sub-committee was appointed to go into this matter. The phrase actually used for this warning, which even then made some smile cynically, was "days of grace." In working out in detail the measures of prearrangement and co-ordination required to give effect to our benevolent solicitude for a potential foe, the extent of what had to be done came as a revelation.

Experience in this case served as the thin end of the wedge for the introduction of investigation into what war would entail in other directions. At the instance of the Secretary of the C.I.D. the next step taken was an inquiry into the position of neutral vessels on the outbreak of hostilities. Here again the extent of what had to be foreseen and pre-defined

¹ The late Lord Haldane, then Secretary of State for War.

came as a shock. By a slow process the Government was in this way led almost imperceptibly to appreciate the necessity for examining and laying down beforehand the co-ordinated action of every department should war break out: and in 1911 was formed a sub-committee of the C.I.D. for the co-ordination of departmental action in the event of hostilities. The fruit of its labours was the War Book. When Captain Hankey assumed the duties of Secretary of the C.I.D. in 1912, he pressed on with this work unobtrusively but insistently, in order that all should be ready if, and when, the day of trial came. For many months Major Grant-Duff¹ of the Black Watch carried on his arduous duty of recording and keeping up to date the various provisions decided and mutually agreed upon, as well as the difficult task of persuading well-meaning but short-sighted and sceptical officials to realize the importance of the subject and prepare to play their part. Able to take a comprehensive view, he was also a master of detail, and was possessed of tact, great powers of persuasion, and immense industry. He was succeeded about a year before the War by Major Longridge of the Indian Army,² who had similar attributes.

The War Book had undergone its latest revision and was completed just two months before it was to be put to the test. On 3rd August, 1914, everything was ready and pigeon-holed, the necessary letters and telegrams were drafted, and the channel of procedure for all concerned was buoyed and lighted. In spite of this, there were heads of departments who had on that evening to inquire from the office of the C.I.D. what was to be done. Not every official had believed that the necessity for the action laid down in this tome would ever arise, or had taken its provisions seriously. Apart from what was achieved by the

¹ The late Lieutenant-Colonel Adrian Grant-Duff, C.B.

² The late Lieutenant-Colonel J. A. Longridge, C.M.G.

Fighting Services, our thanks for the smoothness with which the nation was able to slide in one night from peace to war are due primarily to the Service of Counter-Espionage and to the three men mentioned above.¹

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In common with all other officers on the active list, I had been warned of the duties I should have to undertake in the event of mobilization. On the assumption that hostilities would entail the despatch abroad of an expeditionary force, my post was to be that of Deputy Director of Railways for that force. Accordingly, on 4th August, 1914, I became "D.D.R., B.E.F., France," with orders to report at Kensington Barracks—the mobilization centre for several formations, including that of the railway staff. My actual rank being that of major, I was promoted temporary lieutenant-colonel.

The Franco-German War had shown that if there were any activity in war for which absolute unity of control was essential, it was that of railway transport. In our pre-war conversations, the French had agreed to accept full responsibility for the working of their own railways, for which they had developed a very complete organization.

On our side, at the outset of hostilities, in spite of our experience in South Africa, it does not appear to have been fully realized how large a staff it would be necessary to provide in order to maintain liaison between the British Army and the special corps of French staff officers who were the connecting link between their own army and their own civil railway

¹ On the 11th September, 1914, I met Grant-Duff marching at the head of his battalion on his way up to the Aisne and had the satisfaction of telling him of what value his work had proved. He was killed next day. Longridge was killed in France on the 18th August, 1916.

staff, and who were, in fact, the final arbiters of what could be done on the railway. We accordingly sent out at first with the Expeditionary Force a small number of men to act as railway transport officers. The Director of Railways and his Deputy were retained in England for the purpose—among others—of forming additional railway units. This was part of my duty, as I had performed similar work during the South African War with an irregular engineering force—the Railway Pioneer Regiment—which was raised to carry out the reconstruction of the railways.

Of all that happened at this time the event that stands out most clearly in my memory is the fall of Liège. In common with many, I had looked upon this fortress—one of the strongest—as being capable of a far more prolonged resistance; and to me as an Engineer its speedy fall came as a shock. It upset all my values. What about the delaying power of Namur and Antwerp? What were these giant howitzers that the Germans had suddenly produced? What other mysteries might they not have in store for us?

My change of occupation was great and complete. From dealing with questions of sufficiently grave importance to come up before the Committee of Imperial Defence, I found myself checking pens, pencils, india-rubbers, etc., in the boxes of stationery of the mobilization equipment. The work of mobilizing the railway transport staff did not take much time. When this was done, my services were lent temporarily to the military staff of the railways at home. I also took a hand in the preliminaries of the formation of additional railway companies of Royal Engineers to supplement the existing small number of Regulars. In this way I renewed my friendship with some of the irregular officers who had served under me in South Africa and now came forward once more to offer their services in time of need.

But my connexion with railways was not to last long. On the afternoon of the 7th September I was inspecting a bridge at Longmoor, near Aldershot, where the new units were being raised, when I received a telegram ordering me to report to the War Office. In military parlance I proceeded forthwith up to London, and on reaching Whitehall, presented myself to Sir Reginald Brade, the Secretary. He told me that Lord Kitchener had definitely come to the conclusion that the nation ought to have more news about the War than it was getting, and that he had selected me to go to France as official correspondent, to write for the Press.

When Lord Kitchener wanted something done it had to be done quickly. I was to start as soon as possible ; the Secretary of State would see me at 2 p.m. on the following day and give me my instructions personally. I was quite ready to go ; and my baggage lay not three hundred yards away in Whitehall Gardens. But this change in the nature of my duties was so sudden that it gave me little time for handing over those of my actual post. From railway official to reporter was a far cry ; and though I felt very doubtful of my qualifications for the position of war correspondent I was elated, as were so many, at the prospect of going to "The Front." In 1914 we did not realize, any more than we had done in 1899, that there would be more than plenty of time for all.

I had known Lord Kitchener in South Africa, and when I presented myself to him next day, as ordered, found him friendly, but quite brief. He kept to the immediate point, and did not enlighten me as to the general situation, of which I knew no more than was in the newspapers. His instructions to me were to go to G.H.Q.—wherever it might be, for it was moving forward—to report to the Commander-in-Chief for the duty of writing articles on the operations of the Army. These articles, after whatever censorship was deemed

necessary in France, were to be sent direct to the Secretary of the War Office for Lord Kitchener's personal approval before publication.

At 3 p.m. I stepped into the car which was waiting to take the King's Messenger to Southampton, with my kit, a packet of foolscap, some pencils and indiarubber, as the complete and sole war correspondent for the largest British army ever sent abroad. In the car was Major Cadogan of the 10th Hussars,¹ the King's Messenger, or liaison officer of the day between London and G.H.Q.

The embarkation officer at Southampton Docks I discovered to be an old friend. He was almost speechless with indignation at what he regarded as the lack of precaution observed in allowing the public free access right up to the gate of the docks, from which point it was quite easy to note and count troop trains as they entered.

We sailed during the night. It was very calm. There were no troops on board and no duties to perform. As I sat alone on deck before turning in I contrasted our furtive departure with the last occasion upon which I had left Southampton to go on active service, in October, 1899, during the South African War. Then it was in broad daylight, in a large liner crammed with cheering troops, and cheering crowds on the quay.

Any precautions taken against submarines were not obtrusive, and the apparently care-free uneventfulness of our passage conveyed a sense of the power and long-range influence of the British Fleet.

On arrival at Havre next morning Cadogan and I found awaiting us a long, low, high-powered, claret-coloured, piratical-looking Mors car, furnished by the French Mission at British G.H.Q. This was the first time I came in contact with *Mission H*—then under the late Colonel (afterwards General) Huguët, who had

¹ The late Major the Hon. W. G. S. Cadogan, M.V.O.

been Military Attaché in London before the War and had collaborated with General Grierson and his successor in the arrangements made for sending a British force to France, should it ever be necessary to do this.

In the car were a French liaison officer, who spoke English extremely well, and a driver in the uniform of a private, who could not speak it at all. The latter, pale-faced with a longish black beard, looked so like an Assyrian that I dubbed him "Sennacherib." The chief characteristics of this individual, as will be seen later, were his entire ignorance of military affairs and customs and his dexterity in driving at an unnecessarily high speed. When we left Havre no one at that place knew where British G.H.Q. then was, or would be that night. To obtain this information we were to call at our Embassy in Paris.

It was a perfect day in early autumn, and the only flies in the ointment of a delightful journey were the furious pace at which Sennacherib drove and the clouds of dust which swirled up from the sun-baked roads. The country hotel at which we stopped for lunch was almost deserted, and we had a hasty but typically French meal served in the open. No one witnessing the scene could have imagined the struggle that was going on not a hundred miles away. Of war the only sign, to one who could read it, was the decrepitude of the few waiters. The picture of that garden, with the sunny landscape beyond the poplars shimmering in the autumn haze, and the yellow leaves softly dropping, one by one, created an impression on me which will never fade. It was the last time for many months that I was to witness a scene of absolute repose undisturbed by turmoil of any kind.

As we approached the capital our journey became yet more exciting owing to the increase in the traffic and the corresponding frequency of our narrow escapes from collision. But the greater the danger, the faster drove the Assyrian. About half-way to Paris, we

met the homecoming King's Messenger, on his way to London with despatches from the Commander-in-Chief. But even he could not tell us for certain where G.H.Q. would be that night. Then, as we neared the zone of the city defences, a different type of peril threatened. At what seemed to be very short distances apart were sentries. These men—the *Gardes des Voieich. et des Communications*—were all past middle-age, obviously having been dug out after long absence from military duties. They were dressed in coats like dressing-gowns and armed with a variety of rifles. On several occasions our driver failed to pull up at the first challenge and was then forced to do so with a jerk at our shouted orders, after the nervous sentry had begun fumbling with his breech-bolt. I was so puzzled at his foolhardiness that I inquired if he were in fact a soldier. To my consternation he replied that he was not. He was a *mécanicien-chauffeur* who had been called up and put straight into uniform. He knew nothing about the Army or the customs of war and did not at all appreciate the serious meaning of a sentry's challenge on active service. Cadogan and I were prepared to take the risk of German bullets, but had no desire to run up against those of our Allies, and insisted that the driver should stop at once, at the first hint of a challenge.

We ascertained at the Embassy that G.H.Q. was at Coulommiers, due east of Paris and south of the Marne, and for this place we headed just as it was getting dusk, the driver assuring us that he knew the way "*parfaitement.*" As we drove on eastwards the danger from the sentries who guarded the barricades across the roads became accentuated with the fall of night. It was a harrowing experience to wait while some old man fumbled with our passes, his gun held between his arms in the classic attitude of Punch, pointing right at us. But the country gradually became more deserted and the barriers and sentries fewer

until we arrived in an area which seemed devoid of population. The refugees from the towns and villages which had been occupied by the Germans must have departed a few days earlier.

Just when it was getting dark our chauffeur confirmed our growing suspicions by admitting that he did not know where he was. Behind the beams of our powerful headlights we sped on through the night, past one deserted village after another, without meeting a soul. In one, as we took a right-angled turn at a slow pace, we were almost blinded by the headlights of a car coming from the opposite direction. When it got abreast of us, and we could see without being dazzled, we discerned that its occupants were not French. From their headgear they might have been British or German. This greatly excited the two Frenchmen, who after the car had passed insisted that it contained "*des sales boches*". They drew their automats and clamoured to turn and challenge the strangers. As senior of our small party I vetoed any such thing, for we were carrying despatches for the commander in the field, and far more might depend on their punctual delivery than upon the activities of four individual enemies—if the people we had seen were indeed enemies.

However, by the time I had given my decision, the cars were already some distance from each other, and I directed that we should increase our pace, to get away from possible interruptions. Not one of us had any idea where we were, and there were no inhabitants from whom to inquire. I personally thought that we were trending too far to the north and might possibly pass through a gap between the French and British and find ourselves held up by enemy patrols. We therefore drove at full speed down the next passable road to the right. After some distance we saw a glare in the sky not far from the road—obviously a camp fire. We switched

off our lights and advanced cautiously, for we could not tell whether the fire betokened a British, French, or German bivouac. Then a gladsome sight met our eyes. Standing up, silhouetted black against the glow of the fire in a way that recalled the earlier phases of the South African War, was a sentry. My intuition that we had been lucky enough to hit upon British troops was confirmed by the welcome challenge—
“’Alt-oo-goes-there?”

CHAPTER III G.H.Q.—THE MARNE—THE AISNE

[*September–October, 1914*]

WE had struck the bivouac of an ammunition column, and an officer directed us to G.H.Q., now at Coulommiers, the little town south of the Marne so celebrated for its cheese, where we arrived about 10 p.m. The Germans had left the place only two nights before ; and though it was not damaged in the sense of the word as we came to understand it later, it was in a terrible mess and empty of food. Here I parted from my travelling companion, who had a billet waiting for him ; and to my regret I never saw him again, for he was killed shortly afterwards. Everyone was busy, and I did not bother to report my arrival to the Military Secretary, Brigadier-General Lambton,¹ who was to be found at the headquarters of the Commander-in-Chief, outside the town. As I carried with me the announcement of my arrival, I naturally found no billet allotted me, and determined, if possible, to cadge a little floor space in that of one of the many friends I was sure to meet. I had not long to search, for I soon ran across Brigadier-General Seely,² who, with his habitual hospitality, at once invited me to share his room.

I shall not forget my first night at the Front. It

¹ Now Major-General the Hon. Sir William Lambton, K.C.B., C.M.G., C.V.O., D.S.O.

² Now Major-General the Right Hon. J. E. B. Seely, P.C., C.B., C.M.G., D.S.O.

was a restless one for both of us. My host was then attached to Sir John French's staff, with a sort of roving commission as a liaison officer between G.H.Q. and the front line, in which capacity he had that day been present at the crossing of the Marne at La Ferté-sous-Jouarre by the 11th Brigade of the 4th Division.¹ No sooner were we stretched out on our valises than he proceeded to describe his recent experience. As we lay there, wide-eyed, in our separate corners, his deep vibrant voice boomed through the little room until the small hours. The story it told affected me deeply in two ways. I heard with sorrow of the casualties, especially those among the East Lancashire Regiment, with which I had lived years before in India. But the feature of his narrative, which struck a chord of greater compass than any that a sense of personal loss could produce, was the part played by the enemy machine guns cunningly placed and concealed in and around the town.

It was late before we ceased talking. Even then I was unable to sleep. I could not get out of my mind the manner in which our troops had been held up. All my scattered thoughts of the last few years on the subject of machine guns came crowding into my brain. And this was only the beginning of our advance—the first occasion, so far as we were concerned, upon which the enemy had been called upon to reveal his skill in defensive tactics! I wondered how many machine guns the Germans must have collected at this point, and recalled the Berlin story, which seemed to be confirmed.²

Short as was the time that I had been at G.H.Q.,

¹ It will be remembered that our advance had begun three days earlier.

² The Germans were actually holding La Ferté-sous-Jouarre and the immediate vicinity with four *Jäger* battalions, whilst there were in the neighbourhood two cavalry divisions. From these troops any number of machine guns up to thirty could have been concentrated round La Ferté itself.

it was long enough for me to note the spirit of confidence engendered by the fact that we were at last advancing and the Germans retiring. And after a retreat of days on end the realization that we were at last striking back justified some elation. But, even if the character of the operations had changed, and the roles were now reversed, so that we, the hustled and hunted, were about to turn the tables and press the enemy, was our future experience going to be a prolonged repetition on a large scale of that of the 4th Division that day?

My wakefulness was intensified by a strange phenomenon. For hours I heard, or imagined, a shrill intermittent whistling above the house in which I lay. I have since thought it might have been the calling of flights of migrating birds. But, as I tossed about, half awake and half asleep, the sound suggested to my excited brain the passage overhead of bullets—machine gun bullets—though it was not really in the least similar.

When I awoke next morning, stiff and blear-eyed, I was more occupied with speculations as to the future than with my immediate duties as war correspondent. But the pressing need of the moment was to get something to eat. As I was not yet a member of any mess I had to fend for myself, no easy matter in a town which had first been occupied by the enemy and then by our own troops. There was not a bite to be had. Finally I succeeded in getting a cup of so-called coffee at a humble and very dirty estaminet.

Here, seated at a dusty fly-blown table, I found two dishevelled Englishmen in plain clothes. Over a crust which we shared they confided to me that they were British newspaper correspondents, and that having reached our zone of operations after immense trouble and great expense they had been discovered and ordered to clear out that day under dire penalties for non-compliance. This was a practical example of

the working of the new censorship system, which brought me to a closer realization of my own responsibilities and the reason for my presence at that spot. These two men, bitter at the failure of all their efforts to be in a position to let the world know of the achievements of the British troops, were very critical of the military authorities, though to me they were sufficiently forgiving to share what looked like their last crust for some time. I was sympathetic. If the War offered a chance to anyone, it did so to the professional war correspondent.

I had never met Sir John French, to whom I later on reported, and though Mr. Churchill had written five days earlier that I might come out, my arrival appeared to cause surprise. The Commander-in-Chief, as may be imagined, was extremely busy. His nerves were plainly on edge, and it was difficult to make out whether he in principle approved or disapproved of the public being kept informed of the course of events. I was not prepared for the attitude of suspicion which he at first adopted towards me, but discovered that it arose from the fact that he imagined I had been sent out by Lord Kitchener to keep a watch upon his actions. I knew nothing of the relations between the two men, which had been embittered by Lord Kitchener's hurried visit to Paris to prevent the threatened independent action of the British, and I endeavoured to disabuse Sir John of such a completely erroneous idea. He was also greatly upset by the retention in England of the 6th Division, which was only then embarking for France. His opinion appeared to be that its presence would have made all the difference in the retreat, and that now, when we had got the enemy on the run, it required only the assistance of that one division to drive him back to his frontier. He wished me through the agency of the newspapers to place before the world his views on the proper conduct of the War. I ex-

plained the impossibility of such a course. I had been appointed to give the nation any news that could be divulged without danger to our operations, and not to challenge the policy of the Government. I also mentioned that my orders were to send what I wrote, after censorship at G.H.Q., direct to the War Office for the approval of the Secretary of State before issue to the Press. Sir John gradually came to view the matter in this light, and instructed General Lambton to hand over to me some notes he had been endeavouring to collect for incorporation in the communiqués.

That was the first of the only two occasions upon which I had any personal dealings with the Commander-in-Chief up to the time I left France nearly ten months later. Having spoken with Lord Kitchener not two days previously, I was able to compare the attitude of the two men, and felt that the distrust of which I had just had evidence was not mutual. In contrast with Sir John, Lord Kitchener had been so calm. It is true that he was farther from the scene of action and could afford to be more detached ; but it is doubtful whether the strain on him was less than that on the commander in the field, though he took it differently. Each was carrying an immense and special load of responsibility in a crisis that was a supreme test for all. At G.H.Q., in spite of the buoyant atmosphere, there were signs of frayed nerves. The retreat had left its mark.

I then reported to Major-General Henry Wilson,¹ who was occupying the position of Major-General, General Staff, usually called the Sub-Chief. We knew each other, and his greeting was friendly, almost boisterous. But he, too, harboured the suspicion that I had been sent out as a kind of watch-dog. Though greatly elated at the turn of affairs, he was more critical of Lord Kitchener—or perhaps only more

¹ The late Field-Marshal Sir Henry Wilson, Bart., G.C.B., D.S.O.

outspoken—than Sir John had been, but, in accordance with his temperament, in lighter vein. He, also, was of the opinion that if only the 6th Division were alongside the others there would be no stopping the onrush of the French and ourselves. He wished me to undertake a crusade to arouse England to the inadequacy of our arrangements for dealing with casualties. This desire was caused principally by the condition of the railway station at Coulommiers, which for twenty-four hours had presented a heartrending spectacle. For some reason it had become a centre for the collection of the casualties of both armies. Crowds of British and French wounded drifted in here, some after walking several miles. Many collapsed on the platform. Long trains loaded with wounded French arrived frequently ; and it was a gruesome sight to see the removal of the bodies of those who had died since the train had left the last station. The low platforms, and the floors of the station rooms, were occupied by cases which were being attended to as well as was possible in the circumstances. All this had worked on General Wilson, who could not understand why there were no properly equipped ambulance trains or suitable transport for such a mass of suffering humanity. In this, though showing his sensibility, he exhibited a certain blindness to realities and a lack of a sense of proportion ; for this was only one result—by no means the most important—of the unpreparedness of both nations for warfare on such a scale. Until the authorities had had time to rise to the situation it would have been both unfair and injudicious to start an agitation. Moreover, any attempt of mine openly to criticize the official efforts would have ended my career as purveyor of news before it had begun.

However, the public was hungry for news, and Lord Kitchener was awaiting it. I therefore endeavoured to find out what had happened since the last com-

muniqué had appeared in the papers, and, seated at a packing-case in a corner of the room where the Intelligence Staff was working, I began my career as official correspondent.

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It may be as well at this point to go back and narrate in some detail the immediate cause of my being where I was. In deference to the attitude of the French, when Lord Kitchener took over the War Office, he reversed all previous arrangements and allowed no correspondents to proceed overseas. It therefore happened that from the 4th August, except for a few bald official communiqués and many rumours, the public was for days without information from the Front. Truly had a veil been drawn over our operations. Then, on Sunday the 30th August, appeared an article by a correspondent who had succeeded in getting in touch with our retreating Expeditionary Force. This article, couched in lurid language, pictured the British Army in a rout rather than a retreat. So alarming was it that that same afternoon the Official Press Bureau in London issued a counterblast calculated to comfort and raise the confidence of the public. After a week's silence, a second official despatch was published. According to report it was the joint production of Lord Kitchener, Mr. Churchill, Mr. F. E. Smith, and Lord Percy.

Discontent now became so great at the unnecessary state of ignorance in which the nation was being kept that it was decided to compromise with a half-measure. War correspondents were not to be allowed at the Front, but their place was to be taken by some specially appointed officer. At the meeting at which this was discussed Mr. Churchill suggested me as a suitable man for this post. My name conveyed nothing to Lord Kitchener, though I had served under him in South Africa and he had dealt with me directly

on more than one occasion. When Mr. Churchill explained that I was the author of *The Defence of Duffer's Drift*,¹ the Secretary of State gave instructions that I should be sent for at once to undertake this duty. This is the explanation of how a well-meaning officer of Engineers was suddenly snatched off a railway bridge to write articles about the British Army.

* * * * *

I was sent out to G.H.Q. to be under the ægis of the Military Secretary. Every possible precaution was rightly taken to prevent the leakage of information likely to be of value to the enemy; and not only had my work to be submitted to the Military Secretary, as had been laid down by Lord Kitchener, but it also had to be passed by two other officers, the Sub-Chief and the Head of the Intelligence. These were merely the local precautions. Over and above this, my articles were to be read by the Secretary of the War Office and Lord Kitchener himself, and, for all I knew, were further to be scrutinized by the Press Bureau in London. One way and another, what finally passed ought to have been fairly innocuous: I could not have given away anything useful to the enemy if I had tried. With the assistance of Colonel Macdonogh,² the Head of the Intelligence, who placed me *au courant* with the existing situation, on the 11th September I produced the first "Despatch from an Officer at the Front" carrying on the narrative from the date of the previous communiqué brought out by the joint effort of the Press Bureau. My second effort was sent off three days later; and from that date until the 18th July, 1915, I endeavoured to maintain a semi-weekly output of news, which failed in regularity only on a few occasions—

¹ A small tactical brochure written after the Boer War.

² Now Lieutenant-General Sir George M. W. Macdonogh, G.B.E., K.C.B., K.C.M.G.

usually owing to delay in censorship.¹ The principle which guided me in my work was above all to avoid helping the enemy. This appeared to me even more important than the purveyance of news to our own people. For the Germans, therefore, I endeavoured to dispense doses of lowering medicine with a few drops of poison added where possible. For home consumption—that is for those who were carrying the burden and footing the bill—I essayed to tell as much of the truth as was compatible with safety, to guard against depression and pessimism, and to check unjustified optimism which might lead to a relaxation of effort.

The censorship was irksome to all concerned. Though the Military Secretary objected, quite logically, to having to pass articles for the Press, he was always approachable and ready to assist by reading at the first opportunity what I wrote. The Sub-Chief also protested, though not with such good reason. He did not appreciate the value of the work I was trying to do, and was not constructive in guidance or suggestion. But he, also, was easy to work with and read promptly and with good-humoured tolerance what I took to him. More than once I woke him up in the middle of the night in order to get an article off by the King's Messenger. His greeting on such occasions would be : " Damn you, Eyewitness. What do you bring your stuff to me for ? Have a cigarette while you wait."

At home, as the pressure of work grew heavier, Lord Kitchener after a time ceased to censor my communications himself.

The second day after my arrival G.H.Q. moved forward from Coulommiers, on the Grand Morin, across the Petit Morin and the Marne, to Fère-en-Tardenois, half-way between the latter river and the Aisne. But I was long enough at Coulommiers, which in this

¹ In all I was responsible for 103 articles.

direction was the high-water mark of the German invading flood, to hear stories from the inhabitants of the frantic exasperation and bitter disappointment of the German officers on receiving the order to go back when almost in sight of Paris—the goal which was to be the reward of their superhuman efforts. Along the road between the two places there were many signs of the enemy's retreat.

Fère-en-Tardenois, our next resting-place, was a pleasant little town clustered round a market square, a grass plot, surrounded by trees. Being now on the strength, I was allotted a billet in the house of an old lady, and had as an office an unfurnished room at the gates of the château in which Sir John French and his personal staff were quartered. Two or three other officers of the Headquarter Staff were lodged in my billet which, though small, was not without such modern refinements as a bathroom and a geyser. While we were at Fère-en-Tardenois the weather broke, and at night I used to lie awake in my feather bed in that over-upholstered, stuffy little room, which smelt of mice, listening to the continuous thudding of the guns along the Aisne, only a few miles north, and pitying the men in the trenches. Behind the house there was a garden with a small unmown lawn, and a fountain ; and in the centre of the grass was a china dog about the size of a terrier, with goggle eyes like those of a Chinese dragon.

In 1924, when motoring through Fère-en-Tardenois, I stopped to see how my little home of ten years before had fared in 1918, in the fighting which took place south of the Aisne. The Place was there, and some of the trees, but though the houses still clustered round, many of them seemed to have changed their character. Where my billet had been was a strange new building. However, I was certain of the locality, and boldly rang the bell. A red-faced man with a serviette tucked into his collar—obviously

disturbed at his *déjeuner*—opened the door. I explained that I was a British ex-officer motoring through, and thought I would call on Madame, whose name I had forgotten, who had been my hostess in September, 1914. The man gazed at me with a lacklustre eye and evidently did not believe my story. Crestfallen, I made an effort to furnish a guarantee of good faith. "Can you at any rate tell me what has become of *le petit chiennot de porcelaine qui se trouvait sur la pelouse du jardin?*" My words had a magical effect, and he thawed completely. He seized me by the hand, drew me inside the door, and insisted on my going in and having a glass of *porto*. Over the wine he informed me that the house had been much damaged in 1918, when his mother, who had remained there throughout the War, had at length been compelled to vacate it and go to another part of the country. The Germans had ransacked the place. After the Armistice, the son had had the house repaired and copies made of all the furniture, so that when the old lady returned, she found very little different inside the home she had occupied all her married life. But alas! There was no longer a china dog.

The day after reaching G.H.Q. I went out to the River Vesle, a tributary on the south of the Aisne, the crossing of which at Braine had just been secured by the Cavalry Division after considerable opposition. The enemy had been caught unawares and had not destroyed the bridge. This was the first occasion on which I came across dead and wounded Germans on the field of battle. Most of those lying on the north of the Vesle had been hit by shrapnel. As I recrossed the river I saw alongside the bridge, under two feet of clear water, a large number of rounds of field-gun ammunition with their bright brass cartridge-cases. I was told that they had been thrown away by the enemy in the hurry of his retreat before our cavalry,

and I duly recorded this interesting fact in my despatch. I afterwards discovered that the ammunition had been abandoned two weeks earlier by the retreating French !

During the three weeks I stayed at Fère-en-Tardenois my department was twice enlarged. First I was joined temporarily by Colonel J. E. Edmonds.¹ There was then another arrival whose appearance was as unexpected as my own had been. Into my room, out of the blue, dropped a captain in the uniform of the Grenadier Guards, a staff cap and red tabs. I thought that, like so many passing officers, he had looked in to give me some news—I had a notice on my window appealing for information. He saluted.

“ Good morning,” I said. “ Have you anything to tell me ? ”

“ Yes,” he replied. “ I’m Percy.”

“ The hell you are,” said I, thinking I had a wag in front of me. “ What about it ? ”

His reply was :

“ I’ve been sent out to G.H.Q. to write Press articles, and I was told to report to you.”

I had already reached the stage of being unmoved by any turn of the military appointments kaleidoscope. Certainly the mania for indiscriminate “ ungumming ” which later on held sway in the British Army had not yet begun, but the abrupt termination of my role as railway officer had not led me to rely on any permanence in that of journalist, so I asked :

“ To assist me or to take over my job ? ”

“ I don’t know,” said my visitor.

“ Oh,” I continued, not sure whether I was relieved or not, “ if that’s the case, you’re my assistant. Come and have some dinner.”

¹ Now Brigadier-General Sir J. E. Edmonds, C.B., C.M.G., in charge of the Military Branch of the Historical Section of the Committee of Imperial Defence and responsible for the *Official History of the Military Operations in France and Flanders*.

And so "The Firm" was increased by the addition of Captain Lord Percy,¹ who served under me as joint correspondent until he was transferred home to the War Office in the following June.

The little band of brothers now consisted of myself, the old and original; Colonel Edmonds, for a limited number of performances only; and a future Duke. This humble and amateur organization of the Fourth Estate, with all its failings, produced copy that had a larger circulation all over the world than any before or since. Through no "damned merit" it had a corner in the news of the thin red line for the universe. Our stuff was a continuous, quite unearned, and water-tight scoop. On the other hand, while I held this post, which was soon to be known as that of the "Eyewitness," I was a living contradiction of the truth of the saying—"You cannot have it both ways in this world." I did have it both ways: and I got it in the neck from each direction. For the professional, hundred-per-cent, hard-faced he-soldier man called me with scorn a "blank journalist": and the professional pale-faced wielder of the pen with equal heartiness cursed me for a "blank blackleg."

From the 12th September to the 8th October, whilst we were struggling to force our way across and beyond the Aisne in the face of the strategic rearguard position taken up by the Germans, G.H.Q. remained at Fère-en-Tardenois. The stationary situation of our troops along the river gave an opportunity for visiting them. But I found that for the purpose of collecting information which I could use it was better to rely more on the reports that came in from divisional headquarters and the daily intelligence summary than on my own eyes. On two occasions I nearly got into trouble for describing what I had seen or been told. In my despatch of the 29th, after having paid a visit to the cavalry division on

¹ The late Duke of Northumberland.

the right, on the north bank of the Aisne, I wrote—what I had learned on good authority—that as we were short of gun ammunition and the Turcos next us were short of rations, they had promised us the co-operation of two heavy guns for ten thousand tins of bully ! This bit of news, after having been passed by all the usual censors at G.H.Q. and the War Office, had been printed. Nevertheless, to the commander of the cavalry division it appeared—quite rightly—that I had divulged something of value to the enemy, and I was threatened with “ disciplinary measures.”

In the same article I had described the shelling of some of our trenches by the enemy, and had named the regiments engaged—the Dorsets, the West Kents, the K.O.Y.L.I.'s, and the K.O.S.B.'s. This also was passed by the multiple censorship ; but its publication caused great perturbation—again quite rightly—because it did give away the presence of those units. On the other hand, in my article of 1st October, as I could describe nothing of military importance, the situation being unchanged, I thought I would have recourse to a little local colour, and pictured the morning toilet of a motor-driver, which I watched as I wrote. This aroused a chorus of criticism and some abuse, especially from those papers which had been protesting most vociferously at the exclusion of correspondents from the zone of operations. Some brother scribes took years to forget this. But in the circumstances I was quite unable to give anything of real value. It was some compensation for the castigation I then received to note later on that the articles of the professional correspondents were not entirely free from descriptive writing-up of trifling details.

During this period I made two flying visits to Paris. The first was to arrange for the distribution of the ten thousand copies of the *Daily Mail* sent over every day by Lord Northcliffe as a gift to the troops. On this occasion incidentally I also carried out a

curious commission. I heard that the Scots Greys were complaining of the conspicuousness of their mounts, and the officer who informed me of this was unaware that it was possible to stain white or grey horses quite dark by the application of permanganate of potash. There was none of this available in the field, and I promised to obtain as much as I could in Paris. I had only time to approach some of the retail chemists, but bought up all they had, which amounted to several pounds, and took it back with me to G.H.Q., for transport up to the unit. I was conveyed to Paris and back by that cheery free-booter, Captain C. B. Baker-Carr,¹ in his powerful Mercédès, having been deprived of the claret-coloured Mors car which had until then been at my disposal when not otherwise occupied. As I had seen neither the Mors nor its driver for a few days, I inquired of *Mission H* and was informed that the car had received a direct hit from a howitzer shell when on the high ground near the river. As a speed-merchant "Baker"—as he was generally called—was not Sennacherib, but he was no tortoise!

Just before I started on my second visit I received a telegram from Lord Northcliffe, who happened to be in Paris, asking me to go and see him. I did not imagine that he wished to see me for my *beaux yeux*, and wondered what he wanted. I determined to walk warily. I was so heavily censored that I had caught "censoritis" and went in fear of giving anything away. I spent the time in the lift on the way up to Lord Northcliffe's suite at the Ritz in buttoning myself up mentally.

I found him in a dressing-gown, suffering from a bad cold. Far from being critical of the amateur war correspondent, he was most friendly. The reason he wanted to see me was twofold: he wished to send a message through me to Sir John French to the

¹ Now Brigadier-General C. B. Baker-Carr, C.M.G., D.S.O.

effect that the whole of the intelligence organization under his control was at the disposal of the Government. It was a valuable offer, because this organization included the most perfect working system both for the collection of information from abroad and its dissemination. He also desired that I should ask Sir John French to allow him to pay a visit to G.H.Q. He discussed the situation, and spoke in bitter tones of the way in which the nation had been allowed to tumble unprepared into a war, the outbreak of which he had long foreseen and against which he had uttered many warnings; and he did not hesitate to express his opinions freely on certain individuals responsible.

Having prophesied and preached the coming of the War for some years, Lord Northcliffe appreciated the profound forces behind it, and feared that the country did not yet realize what lay ahead. In this he was correct. I was to get to know him better later on; and the favourable impression he made on me at our first meeting was confirmed. Whatever his mistakes, and however much some of his actions may have been open to criticism, I felt that the strongest motive which inspired him was patriotism. When I got back to G.H.Q. I passed on his message. My own opinion was that a visit by him was inadvisable. It was impossible to allow one newspaper proprietor a privilege which was not accorded to the others. To discriminate would have been fatal.

Whilst in Paris I heard that the Germans, having failed in their attempt to win a short war, were endeavouring to start a peace movement through certain international, but pro-German, financial groups. To my mind this meant only one thing—*reculer pour mieux sauter*—and that they would start the whole trouble again at an opportunity more favourable to themselves. I considered how a warning on this subject could be conveyed to the people at home, for obviously I could not do it in my letters. By

chance I happened to meet Mr. Robert Blatchford, ex-soldier and Socialist editor of *The Clarion*. I hesitated to broach the subject to him, as he had previously shown himself opposed to officers as a class, and I doubted whether he would listen to anything from one of them. However, I plucked up courage and, without disclosing who I was, begged him to exert his influence to counteract any tendency there might be to give a hearing to such peace proposals, since the acceptance of them would mean only the unopposed ascendancy of Germany over Europe later on, or more bloodshed. Within a week or two a warning appeared in *The Weekly Dispatch*.

Among the few enjoyable incidents at this time was a trip to Rheims, on which I was taken by Baker-Carr. Thanks to his friendship with a member of the firm of G. H. Mumm, we made an inspection of the *caves*, and I took away a case of champagne for my mess. On the way back we called in at the headquarters of the French Army on our right. So far as I remember, we saw General Hély d'Oissel, Chief of the Staff to General Franchet d'Esperey. He was seated alongside the telephone on some straw in a small room of a mean little house, with a few staff officers round him. The simplicity of his surroundings was striking, but everything seemed to be working quietly and efficiently. A day or two earlier, on the same road, Edmonds had met several battalions of French infantry marching westwards, preparatory to their movement north. They were almost without officers, and the Army Commander was standing at the cross-roads wringing his hands and reiterating, "*Où sont mes officiers, où sont mes officiers?*"

Our repeated attempts to press on and establish ourselves on the north of the Aisne were repulsed; and as the days passed, the feeling that we had got the enemy on the run faded away. For some time we were expecting a great effort by the French on our

left and to the north, which would take the enemy in flank and so help our advance. I remember that on one occasion, when at the bottom of a small valley near the river, I heard cutting through the usual noise of artillery fire a roar which was like a solid bar of sound. I took it for the opening of the bombardment by the French 75's heralding the French advance. It *was* the sound of the French guns: but there was no result such as we hoped for.

* * * * *

Few before 1914 foresaw the possibility of the static warfare which lasted on the Western Front for nearly four years. Of those who did one was the banker, M. I. S. Bloch, who so far back as 1897 predicted this state of things in his book—*The War of the Future*. The second was the late Colonel à Court Repington, Military Correspondent of *The Times*, who ten years later suggested to me the likelihood of a preponderance of siege operations in the next great European war. A third was Captain J. F. C. Fuller,¹ who early in 1914 foreshadowed the probability of such a development. There may have been others of whom I am not aware.

But in September, on the Aisne, it quickly became clear that it was no mere rearguard action that we were fighting. And as the resistance of the enemy grew protracted it opened up a prospect of a long continuation of such operations. I felt that there was cause for grave anxiety. My article of the 21st September, 1914, contained the following passage:—

“... But the present battle may well last for some days more before a decision is reached, since, in truth, it now approximates somewhat to siege warfare. The Germans are making use of searchlights, and this fact, coupled with their great strength in heavy artillery, leads to the supposition that they are employing material which may have been collected for the siege of Paris.”

¹ Now Major-General J. F. C. Fuller, C.B., C.B.E., D.S.O.

Four days later, when the Aisne battle was twelve days old, I wrote the following :

“ The growing resemblance of this battle to siege warfare has already been pointed out. The fact that the later actions of the Russo-Japanese War assumed a similar character was thought by many to have been due to exceptional causes, such as the narrowness of the theatre of operations between the Chinese frontier on the West and the mountainous country of Northern Korea on the East, and the lack of roads which limited the extent of ground over which it was possible for the rival armies to manœuvre, and the fact that both forces were tied to one line of railway.

“ No such factors are exerting any influence on the present battle. Nevertheless, a similar situation has been produced, owing, first, to the immense power of resistance possessed by an army which is amply equipped with heavy artillery and has sufficient time to fortify itself : and, secondly, to the vast size of the forces engaged, which at present stretch more than half-across France. The extent of country covered is so great as to render slow any efforts to manœuvre and march round to a flank in order to escape the costly expedient of a frontal attack against heavily fortified positions. To state that methods of attack must approximate more closely to those of siege warfare, the greater the resemblance of the defences to those of a fortress, is a platitude ; but it is one which will bear repetition if it in any way assists to make the present situation clear.”

We now know that the Germans had no more expected protracted trench warfare than had the French or we ourselves. But they were much helped by their preparations for the possibility of sieges, their first train-load of engineer stores for operations of this nature reaching the Aisne as early as the 14th September. Up to the end of the “ Race to the Sea,” during which each side was trying to outflank the other, there were great hopes, and some chance, of the con-

tinuance of a warfare of movement. Half-way through November, when the gap on either side had been finally closed, all prospect of this had disappeared. Yet the first occasion on which we carried out an offensive according to the old-fashioned principles of siege warfare was in June, 1917, at the Battle of Messines.

Our efforts to advance were in most cases frustrated by machine guns, frequently in combination with an obstacle hastily made from rabbit wire or fencing. The tale I had heard on my first night at Coulommiers daily received fresh confirmation. If our resourceful, industrious, and well-equipped opponents were able to accomplish so much in haste and with improvised means, what might they not do, given time, even with field defences? During the first week in October my mind continually returned to this. And, vaguely, I pictured to myself some form of armoured vehicle immune against bullets, which should be capable of destroying machine guns and of ploughing a way through wire.

This picture, though not yet in focus and ill-defined, was the germ of the future Tank.

* * * * *

On the Aisne we at all times suffered from the great preponderance of the Germans in artillery, especially in heavy field howitzers. As, however, we had not got the material means with which to counter this disadvantage, we could only try to mislead the enemy as to the damage he was doing us. In one despatch at this time, in the hope of inducing the Germans to economize, I took some trouble to give an exaggerated account of the manner in which they were wasting expensive ammunition. My articles were still read by Lord Kitchener himself, and I added a private message to him that in this case I had written the exact reverse of the truth. I thought I was

justified in misleading our people at home if by so doing I could help the men in the front line.

I have mentioned the inadequacy of our means for dealing with casualties, though we were for our small army better equipped than the French. When we left the Aisne region there had not been time for any marked improvement, but strenuous steps were being taken by official and voluntary agencies to remedy this state of affairs. Here I started the practice of trying to obtain first-hand information from officers and men, wounded or otherwise, who had actually been in the fighting; and for this purpose I often visited hospitals and casualty clearing-stations. Close to Fère-en-Tardenois in a large barn was one of the latter. The interior was a strange and harrowing sight. The floor was covered to a depth of a foot and a half with wheat. Down its length a path had been shovelled, and on each side lay long rows of men on the golden grain, which was either scooped out or fitted itself to the pressure of their bodies. Though a waste of foodstuff, it provided comfortable bedding for the wounded.

On the 7th October I was told that G.H.Q. was moving next day to Abbeville, in accordance with the scheme for transferring the British northwards to the left of the French. The first steps in the movement of the forces had been taken a week earlier, the plan having been agreed upon between the two commanders-in-chief a few days before that. I had not heard of it; but even to anyone who was not in the know and happened to visit Fère-en-Tardenois it would have been obvious that a flitting was imminent, for the whole *Place* was crowded with motor vehicles of every description.

It was surprising to note the blindness that prevailed as late as October, 1914, as to the changed conditions brought about by aviation. As things were, the first German airman who now flew over Fère-en-Tardenois

could not have failed to discover that a move thence of some import was about to take place. A suggestion that the actual departure of G.H.Q. should be camouflaged by the collection there, after it had gone, of a number of vehicles and other objects resembling vehicles, met with no response. The general sentiment—if the matter got a thought—seemed to be that “there’s a sweet little cherub that sits up aloft to keep watch for the life of poor Jack.”

And when we departed on our way northward next day, the recently crowded market-place of Fère-en-Tardenois was left “bare as the paunch of the purser’s sow.”

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CHAPTER IV G.H.Q.—ABBEVILLE—ST. OMER

A Ray of Light

[October, 1914]

PERCY and I and one other officer made the journey to Abbeville, temporarily G.H.Q., in a car driven by its owner—one of the sporting members of the R.A.C. who had on the declaration of war offered themselves and their cars to the Army. He was a charming person but must have been afflicted with the prevalent speed-mania, for he, also, drove like a record-breaking fiend. The only noteworthy incident of the journey was the sight of a wrecked German ammunition convoy, which had been blown up in the Forêt de Retz, near Villers-Cotterêts.

At Abbeville the company of Eyewitness received a welcome accession of strength in the arrival from London of Superintending-Clerk G. S. Oxburgh, R.E.,¹ who, at my request, had been sent out from the Historical Section, Committee of Imperial Defence, to assist me. With him came a typewriter and a black deed-box, filled with a further supply of foolscap and more indiarubber. This reinforcement was most welcome, for up till then I had had to get my MS. typed when and where I could by the goodwill of different clerks in their spare time.

It was now that, in addition to trying to furnish our own people with information, I made my first and last direct attempt to influence the enemy, namely, by propaganda. At that time, in spite of the oft-quoted

¹ Now Major G. S. Oxburgh, M.B.E., Royal Engineers.

dictum of Napoleon, that in war the moral is to the physical as three to one, we were, as a nation, completely blind to the meaning of mass suggestion and to the importance of working on the minds of our opponents. The Army shared this blindness to the full, and the word "propaganda" was almost unknown. In this direction the Germans made efforts long before we did, though these were clumsy, and so far as they were aimed at us, betrayed ignorance of the mentality of those whom they were trying to affect.

In 1914 it should have been obvious, from what was known of the preparations that had been going on for years, and from the reaction of the German people to the idea of "*der Tag*," that when war came about they would be under the influence of patriotic mass emotion and convinced of the justice of their cause. The designs on which Germany had been for so long engaged became clear as soon as war started, even if they had been unperceived up to that time. By October, 1914, it could be gathered from the documents found on the dead and wounded and from the demeanour of prisoners that every individual of the German Army was convinced that he was engaged in a conflict in defence of the Fatherland.¹ And, brutal and ruthless as their methods of waging war may have been, it could not be denied that the troops were fighting bravely and with the utmost determination. I was persuaded that far-reaching results might be

¹ In this connexion Brigadier-General John Charteris wrote from the Aisne in October, 1914: "One very strange fact is emerging quite clearly from the captured correspondence and from the prisoners, and that is that the general run of Germans are quite honestly convinced that the war has been forced upon Germany against every effort and wish of the German Government. I could write screeds about this, but I won't. The important part is that it makes them, of course, far more formidable, and there is far less chance of a break in their 'will to fight' than if they thought they were trying for conquests at the behest of their Government." —*At G.H.Q.*, p. 44.

BEKANNTMACHUNG.

EINE AUFKLÄRUNG FÜR DIE DEUTSCHEN SOLDATEN.

Es ist bekannt geworden, dass den deutschen Soldaten mitgeteilt worden ist, die Engländer behandelten in unmenschlicher Weise die von ihnen Gefangengenommenen. Das ist eine Lüge.

Alle die deutschen Kriegsgefangenen werden gut behandelt, und erhalten von den Engländern dieselbe Verpflegung wie ihre eigenen Soldaten.

Diese Gelegenheit wird jetzt wahrgenommen, um dem deutschen Soldaten über einige Tatsachen, die ihm bis jetzt geheim gehalten wurden, Aufschluss zu geben.

Das deutsche Heer hat niemals Paris erreicht noch besetzt, und hat sich seit dem 5 September davon zurückgezogen.

Das englische Heer ist weder gefangen noch geschlagen. Es nimmt jeden Tag an Kraft zu.

Das französische Heer ist nicht geschlagen. Ganz im Gegenteil, da es bei MONTMIRAIL den deutschen eine schwere Niederlage beibrachte.

Russland und Serbien haben Oesterreich in so entschiedener Weise geschlagen, dass es gar keine Rolle mehr spielt.

Mit Ausnahme von einigen Kreuzern, ist die deutsche Schifffahrt, Handels sowie Kriegsmarine auf dem Meere nicht mehr zu sehen.

Die englischen und deutschen Flotten haben alle beide Verluste erlitten, die Deutsche jedoch die schwersten.

Deutschland hat schon mehrere Kolonien verloren, und wird in kurzer Zeit was ihr übrig bleibt auch verlieren. Japan hat Deutschland den Krieg erklärt, Kiau-chiao wird von den Engländern und Japanern jetzt belagert.

Die in der Presse verbreitete Nachricht, dass die englischen Kolonien und Indien im Aufstand gegen Grossbritannien seien, ist total unwahr. Ganz im Gegenteil, haben diese Kolonien grosse Truppenteile und viele Verpflegungsmittel, um dem Vaterland beizustehen, nach Frankreich gesandt.

Irland ist mit England einig, und schickt vom Norden und Süden seine Soldaten, die mit Begeisterung neben ihren englischen Kameraden kämpfen.

Der Kaiser und die preussische Kriegspartei haben diesen Krieg gegen alle Interessen des Vaterlands gewollt. In Geheimen hatten sie sich auf diesen Krieg vorbereitet. Deutschland allein war kriegsbereit, worauf die vorübergehenden Erfolge zurückzuführen sind. Jetzt ist es gelungen dem siegreichen Vormarsch Einhalt zu tun. Unterstützt von den Sympathien der ganzen Kulturwelt, welche mit Abscheu einen mutwilligen Eroberungskrieg betrachtet, wird Grossbritannien, Frankreich, Russland, Belgien, Serbien, Montenegro und Japan den Krieg so lange durchführen, bis sie ihre Ende erreicht haben.

Diese Tatsachen bringen wir zur allgemeinen Kenntniss, um die von Euch verborgene Wahrheit ans Licht zu bringen. Ihr kämpft nicht um Euer Vaterland zu verteidigen, da es keinem Menschen eingefallen ist, Deutschland anzugreifen. Ihr kämpft um die ehrgeizige Kriegslust der Militäerpartei auf Kosten der wahren Interessen des Vaterlands zu befriedigen. Dieser ganze Klimbim ist eine Gemeinheit.

Auf den ersten Blick werden Euch diese Tatsachen unwahrscheinlich vorkommen. Jetzt aber ist es an Euch die Ereignisse der letzten Wochen mit der von den Militäerbehörden fabrizierten Nachrichten zu vergleichen.

DIE RUSSEN ERRANGEN AM 4 OKTOBER EINEN GEWALTIGEN SIEG ÜBER DIE DEUTSCHEN ARMEEN IN OSTPREUSSEN. VERLUSTE DER DEUTSCHEN 70,000

PROPAGANDA LEAFLET, OF WHICH 25,000 COPIES WERE DROPPED FROM THE AIR BEHIND THE GERMAN FRONT LINE IN OCTOBER, 1914

obtained if it were at all possible to shake their faith in the justice of their cause. Much might be done at small cost, with no great trouble, and with little risk.

Acting on this conviction, I drafted a leaflet to counteract the false teaching that had for years been instilled into the whole German nation, and to reveal to the army facing us some of the real truth, or at least to implant the seeds of doubt. The first thing to be done was to disabuse the German soldier of the idea that he was fighting in defence of his country against the attack of a ring of enemies. The leaflet, therefore, was directed chiefly to this end, but included certain other important points which appeared likely to appeal most to the minds of those whom we wished to influence. It was intended to be the first of a regular series of bulletins to be disseminated at intervals among the enemy troops.

In order to make the most of the space available, the message was printed on both sides of the paper, large Roman type being employed so that it might be easily read, and on paper of a bright arsenical green—suggestive of poison—to prevent it being used for other purposes. At my request, the Paris *Daily Mail* Press printed 25,000 copies for a nominal fee. These were handed over without delay to the Royal Flying Corps at Abbeville to be dropped behind the enemy lines.¹

Though this first distribution of leaflets had official sanction, when the time came for the issue of the second, approval was withheld. Whether this relinquishment of a most valuable, long-range and wholesale weapon was due to lack of vision and disbelief in its efficacy, to the practical difficulties of distribution, the scarcity of aeroplanes, or to the fear of drastic treatment of any of our aviators who might be captured in performing such work—as indeed was threatened later—it was a mistake.

¹ This leaflet is reproduced here in facsimile.

So far as I was concerned, the idea of distributing propaganda from the air was original; but it was a perfectly obvious move, and was not new. As I have since learned, it was carried out more than a century ago by Lord Cochrane, who had pamphlets dropped from kites towed by the brig *Pallas* when cruising along the French coast.¹

What followed my early attempt to inaugurate psychological warfare is not within my immediate knowledge. Though this form of activity remained for some time practically neglected, a good deal was done sporadically. Early in 1916 this culminated in the formation of a Propaganda Branch of the Military Intelligence Department at the War Office. In the spring of that year—some eighteen months after my effort—this policy was taken up more seriously. The work grew in importance and scope until within two years about a million leaflets were being distributed every month.²

February, 1918, saw a great step forward. Lord Northcliffe was appointed Director of Propaganda in Enemy Countries, and thus perhaps the greatest power in this particular direction in the whole world was enlisted in the good cause. In addition to long experience in mass psychology, Lord Northcliffe brought with him all the machinery and resources for the collection and dissemination of information which are at the disposal of a huge newspaper organization. At first efforts were concentrated on the Austro-Hungarian Front, where the racial mixture of troops appeared to offer the most susceptible soil. Such was the success achieved, that within three months the Prime Minister, Mr. Lloyd George, requested Lord Northcliffe to turn his attention to propaganda along the Western Front: "I feel sure that much

¹ *The Air Weapon*, by C. F. Snowdon Gamble, vol. 1, p. 33.

² During the Somme battle we dropped leaflets, facsimiles of German prisoners' letters, behind the German lines.

more can be done to disintegrate the morale of the German Army along the same lines as we appear to have adopted with great success in the Austro-Hungarian Army." The day after the Armistice he expressed his thanks to the man largely responsible for what had been achieved in contributing to the dramatic collapse of the Central Powers.¹

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Whilst G.H.Q. was at Abbeville the Army was split up. Two corps, the IInd and IIIrd, with the cavalry, had come north and were deploying between Béthune and Armentières, endeavouring to force their way northwards and eastwards in an attempt to outflank the Germans and to prevent in any case their being outflanked themselves. The Ist Corps, which was left behind on the Aisne, was holding an extended front until the whole of the position should be taken over by the French. Our troops were scattered and the fighting in the north consisted of a series of isolated actions. The distances were considerable; information did not come in quickly; and it was impossible to frame a coherent picture or produce a continuous narrative.

Since our headquarters found it difficult to ascertain exactly what was happening, the Germans must have been even more puzzled by the situation. They were facing some British troops in the north (the 7th Division, of whose landing they knew), others farther south, round Armentières and Béthune, and, after a gap of many miles, others again still farther south on the Aisne, where they had been for the past month. Realizing that whatever I wrote quickly reached the German High Command, I decided to produce something which might add to the enemy's mystification. In my dispatches of the 9th and 13th October I gave

¹ I am greatly indebted for much of this account to *The Secrets of Crewe House*, by Sir Campbell Stuart, K.B.E., published in 1921.

a detailed description of the Aisne Valley, worded as if British G.H.Q. were still on its south side. This was done in the hope of inducing the enemy to believe that the British, still holding the Aisne, were not just a fraction but all those who had been there for the past month, and that our forces northward from Béthune were only those which had just been landed. In my next article of four days later, this fiction was dropped, as the Germans by then must have discovered enough to discount it. Of course writing of this kind—which was not “news”—did not meet with the approval of the newspapers. I quite appreciated how unsatisfying to the public it must be, but thought that for the object stated it was justified. In pursuance of this same policy, I spent some time preparing a bogus message to be sent out by wireless to an imaginary detachment. Its despatch was not approved.

Unavoidably patchy and disjointed as was the information which came in, both from the cavalry and from the infantry following them, two things stood out: first, that our advance was being held up in every direction: secondly, that in nearly every case the cause was machine guns, with or without wire. The continued predominance of this factor in what we had hoped was to be open warfare repeated and emphasized the warning of the Aisne fighting as to what we might have to expect if and when the so-called warfare of movement should finally cease. The great problem before us, therefore, if we were to continue to press forward—which then appeared to be our strategic policy—was how to deal with this factor.

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On the 13th the Firm of Eyewitness migrated, with G.H.Q., to St. Omer, a small provincial town, which even in fine weather has much the same sad air as

Bruges. Most of its inhabitants were still there when we arrived, though a few days previously there had been a great scare and a partial exodus owing to the presence of German cavalry at Bailleul, some miles to the east, and they had just had their first experience of being bombed. My billet was in a house in the main street, which also contained the Intelligence Mess, of which I was a member; and its chief claim to remembrance was its smell. It reeked—not from dirt, nor from sewage, as did the street outside—but from the very methods adopted to keep it clean. The owner, who lived in the back premises, polished the floor-covering with some evil-smelling condiment, suggestive of a mixture of paraffin and tom-cat, and the atmosphere in our little ante-room when the stove was lit was unforgettable. It was not long before I changed my quarters and moved to another billet which was occupied by two brother officers of the Engineers, where I stayed till I left France in July. This was comfortable enough, being furnished in the most modern style, and having a luxurious bathroom. The only drawback was that its owner happened to be a gentleman of a very litigious and argumentative type.

For a little time the identity of the individual responsible for the reports from G.H.Q. was an entire mystery, though it was not long before some of the papers took to calling him "The Eyewitness"; and this was the appellation generally applied to me, even after my name had been discovered.

At St. Omer, the office of Eyewitness was in one of the ground-floor rooms of a private house exactly opposite the quarters of the Commander-in-Chief. Here it remained until the liquidation of the business in the following July. It was a port of call for many visitors. The Prince of Wales, who was then doing duty with the Guards, was among them. The system of work was as follows: during the day one of us went out to visit divisional or brigade headquarters

on some sector of the front ; while the one remaining behind framed a narrative from the Intelligence Summaries which had been received by the previous midnight, from the liaison officers' reports up to that time, and from those of the corps and divisions of the day before. Except on special occasions, the liaison officers usually called between six and seven in the evening, when they had made their official report to the Sub-Chief of Staff. Any time after that, the Intelligence Summaries began to come in. By eight o'clock most of the information due on any day had arrived and the extraction of items and compilation of a news-letter went on up till midnight.

I had much hoped that the liaison officers would prove a useful source of information. These during the earlier months of the War were all staff officers of field rank, attached to G.H.Q. and Corps headquarters, between which they were a means of communication. During the retreat, when our troops were continuously on the move and scattered, they had an arduous task and were of the greatest use in maintaining touch. But as the Army crystallized into a permanent position and other methods of communication were established, their special usefulness decreased. When G.H.Q. was at St. Omer they went out each morning, with orders, etc., to corps and other formations, remained there during the day and returned in the evening with reports and personal impressions of the situation. As a source of information to me they were a broken reed. As a rule, I could not make use of what they told me, and except for one or two old friends, I did not find them very communicative. With low cunning, therefore, I had sent out to me by the King's Messenger daily from London a copy of each of the leading newspapers. These arrived early in the afternoon, and to each liaison officer who came to see me in the evening I gave a copy of that day's paper. Not only had he

the pleasure of reading it himself, but he was able to acquire merit by taking it out next morning to the general he visited. None of the liaison officers refused the newspaper, though I must admit that the assistance of most of them was not often worth a half-penny. But I got some idea of the corps and divisional point of view, even if it was of small news value.

When G.H.Q. moved into St. Omer, the place seemed half-asleep, and there was little life about the dark streets and gloomy houses. Though few of our troops were actually there, many had passed through and close by; and it must have been obvious to all that the place was going to be the centre of the British Army. The Northern French are proverbially keen business people, and it might have been thought that the tradesmen of the town would have done something to win more of the profits which they were so eager to make and to retain. On the contrary, their lack of enterprise was astonishing. There was no sign of any constructive effort to attract the custom of the British or to persuade them to spend money. On the day of our arrival Percy and I had a meal at a small *pâtisserie*, and thought we would do a good turn to the hard-boiled spinster who ran the place. I asked whether she realized that St. Omer was to be the British Headquarters—which would mean hundreds of good customers. She replied that she knew that the British troops were coming there.

"Why, then," said I, "have you not put up a notice to attract them? If you had been a German you would already have had a poster out in English."

To this the answer, with a shrug of the shoulders, was that she did not know English.

"If that's all," I said, "I'll make you a rich woman. Give me a large sheet of paper, some ink and a pen."

Surprised at the ways of *les Anglais*, almost protesting, she produced these articles, with a peevish smile. I tried the pen. It was the usual needle-pointed

variety of the hotel or telegraph office, and tore gashes in the paper. Silently, I broke the wooden penholder in half, took the stump in my mouth, and to the lady's consternation proceeded to chew it. Then, with the fibrous brush dipped in ink, I drew out an alluring notice in three-inch block capitals to the following effect :

LOOK HERE !	COME IN !
GOOD OMELETTE !	
GOOD COFFEE !	
GOOD BREAD & BUTTER !	
ALL VERY CHEAP.	
VIVENT LES ANGLAIS !	

This I stuck on to the inside of the window with some anaemic, fly-blown jujubes, politely saluted the mystified *patronne*, and departed with the hope that she would make her fortune in a week.

That was half-way through October. Every few days till the end of the year, I looked in, to have a cup of coffee or chocolate. The shop was always crammed with khaki of all ranks. To my many queries as to how business was, the lady invariably replied with a smile that it "marched" very well. At the New Year, when the French customarily exchange presents, Percy and I thought we would test the correctness of the age-old reputation of the Normans for generosity, by giving this good dame a chance to present us with a stick of chocolate or a bun in gratitude for her fortune. We entered and made the usual inquiry. "*Bon jour, messieurs : les affaires marchent toujours bien,*" said Madame, without the slightest movement towards bun-bin or chocolate-dump. The racial character had not changed ! "Kind hearts are

more than coronets, and simple faith than Norman blood," I muttered tactfully to my companion as we sallied forth.

Of the keen business methods of our Allies there was no lack of examples during the War. When it became necessary to move the Machine Gun School from St. Omer to a site which permitted of expansion, a suitable spot for it was found near Etaples. It is related that when this decision was made known to the inhabitants of the latter place immense opposition was shown to the proposal—presumably with a view to swelling the amount of compensation which could be demanded. After various objections had been met and disposed of, including that of the disturbance that would be caused to the rabbits, the last protest to be brought forward was one from the local Shrimpers' Union. The noise of the firing—so the deputation maintained—would occasion great loss to the industry during the spawning season, by reason of the miscarriages likely to be brought about among the lady shrimps. History is silent as to how this objection was overcome.

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The hospitals in and around the town quickly filled up with wounded, and much valuable first-hand information was to be gleaned from visiting them. Exaggeration due to shock and strain had to be discounted, and naturally the statements of wounded officers could be accepted more literally than those of the rank and file. With their personal experiences confined to what had occurred immediately around them, the men were apt to colour their account of the whole battle according to what they themselves saw and heard and felt. It needed some insight into the character of one's countrymen to understand that their behaviour in no way corresponded with the gloomy point of view they expressed in words. For

instance, it rarely happened that a man when describing any fighting in which his unit had taken part did not say that it had been "Cut up somethin' crool," or "deecimated."

There was, in truth, little information gathered from these sources which could be used in the Eyewitness articles, either because it might be inaccurate, might give away the identity of units, or might in the eyes of some censor be depressing for the public. But having the run of the hospitals placed me in a unique position, and enabled me to obtain facts direct from those who had been "through it," with the result that I was early able to confirm my suspicions as to a factor in the operations of which the significance was not for some time generally realized.

I had not been at St. Omer two days when I was asked for by the War Office to resume my railway duties under the Quartermaster-General, who apparently was unaware of the fact that I had been grabbed and sent to the Front. But by this time G.H.Q. appreciated in part the necessity for keeping the people at home posted as to what was going on, and replied that my services as official correspondent were still required. Three days later a second telegram came from the War Office. As all the arrangements for the distribution of the daily papers presented to the troops had now to be made afresh, owing to the Army's move northwards, it was decided that I should go to London to see the Quartermaster-General, and at the same time deal with this question. I accordingly left for home next morning.

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As I bowled along in my car, on my way from St. Omer, in the early hours of the 19th October, I speculated idly as to what the next turn of the wheel would bring me. It seemed quite possible that within a very short time I might again find myself doing rail-

way work. But my thoughts soon returned to the subject which had absorbed them for the past five weeks. Since I had been at the front all the information I had gathered—whether from official reports, from the hospitals or from any other source—had seemed to me consistently to bear out the fact that apart from his artillery the main strength of the enemy resistance—still only of an improvised nature—lay in his skilful combination of machine guns and wire. Throughout this time I had been racking my brains to discover an antidote; and within the last two weeks my vague idea of an armoured vehicle had definitely crystallized in the form of a power-driven, bullet-proof, armed engine, capable of destroying machine guns, of crossing country and trenches, of breaking through entanglements, and of climbing earthworks.

But the difficulty was to find or evolve something which would fulfil these conditions—especially the last three.

It was upon this that my mind was concentrated when, straight ahead, in the clear morning air above the ground mist, came into view the *phare* of Calais. Like a beam from that same lighthouse the idea flashed across my brain—the American Caterpillar Tractor at Antwerp! I recalled its reputed performance. If this agricultural machine could really do all that report credited it with, why should it not be modified and adapted to suit our present requirements for war? The key to the problem lay in the caterpillar track!

When I stepped aboard the Folkestone boat I felt I had found the answer to a question of far greater import than that of my own future.

CHAPTER V THE FIRST AND SECOND SEEDS

"Ypres, 1914"

[October–December, 1914]

I REACHED London in the early afternoon, celebrating my arrival by handing over to the custody of the military police at Charing Cross Station two foreigners whose conversation and attitude aroused my suspicions. The rest of the day I spent at the War Office, and ascertained that the Quartermaster-General had no objection to my continuing my journalistic work at G.H.Q., provided I was available to return to my railway duties if required. The question of the despatch and distribution of the newspapers would, I found, take two or three days to arrange. But behind and beyond these two immediate matters—one merely personal, the other administrative—loomed the big problem which was so greatly exercising my mind. Beside it everything else paled into insignificance.

I believed that the idea which had come to me that morning would prove the solution. "But I laugh at ideas!" once said Foch. "However good they may be, they possess value only in so far as they are translated into facts." And I was grateful for the happy chance that had brought me to England, thus giving me an opportunity to try to get my idea translated into fact. The best way of doing this seemed to be to lay it before Lord Kitchener himself, and before the Secretary of the still existent Committee of Imperial Defence. As I had been sent

out to France and given my instructions by the former, I was entitled to seek an interview and report to him. But the Secretary of State for War was so overburdened and driven that I felt that I should make more headway with my erstwhile chief, Hankey. He, as secretary of the body which was to some extent assuming control of the conduct of the War, had access to everyone, and was in a position of influence which enabled him to speak with the authority of the Prime Minister behind him and so obtain a hearing in a way no one else could. My best course, therefore, appeared to be to approach him first.

On the following day, the 20th October, I saw Hankey. I described the state of stalemate approximating to a species of siege warfare which had developed on the Western Front and seemed likely to become permanent. I expounded my view that the chief difficulty we should encounter in our attempts to thrust the Germans out of France and Belgium would be their employment of machine guns and wire. I reminded him of the Holt Caterpillar Tractor—the existence of which I had reported to him in July. Coming down to “brass tacks” and the immediate practical aspect of the question, I propounded my solution and suggested that some of these tractors, if there were none then in England, should be obtained and modified, or redesigned, and converted into fighting machines, such as I contemplated. I found him a sympathetic listener. He was quick to appreciate the implications of a stalemate and my suggestion for dealing with it.

We arranged that I should make a report to Lord Kitchener, if I saw him, and take up the idea at G.H.Q. when I returned to France, and that he, also, should put the matter before the Secretary of State for War. Next day we met again and discussed this scheme at lunch at the United Service Club, where Captain Tulloch, whose name I have

already mentioned, joined us. He was greatly interested, all the more because, as he then informed us, he had had an idea a few years previously for a steam-driven machine of a very much larger type based on the Hornsby-Ackroyd Tractor.

Later in the day I called on Mr. Asquith. I was one of the first officers known to him personally to return from the Front, and he had expressed a wish to see me. He received me alone in the Cabinet room at "No. 10." This seemed a splendid opportunity for broaching the subject which was monopolizing my mind. But the position was delicate, for though as an assistant secretary of the Committee of Imperial Defence I had served immediately under the Prime Minister for over a year, I was now doing military duty. Rightly or wrongly—I felt that until I had reported to Lord Kitchener I was bound to be guarded in any communications or expression of opinion I made in other quarters. In about twenty minutes' conversation, therefore, the only important points upon which I talked freely were those about which there was no secrecy, such as our weakness in artillery and machine guns, and its effect—now that we were attempting to advance. I could not be more explicit, though I did not feel that Mr. Asquith appreciated the fundamental implications of what I told him, or the urgency of everything to do with the conduct of war—which indeed was something foreign to his whole upbringing, experience and temperament.¹

It had been my intention to return to France on the 22nd; but, as Lord Kitchener gave me an appointment for that day, I postponed my departure. Unfortunately, he was too busy to see me, and so on

¹ Six months later he visited the newly-formed Machine Gun School at St. Omer and had the chance of verifying for himself what I had told him. I wondered whether he then remembered our conversation.

the 23rd I went back to G.H.Q. without meeting him.

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My conversation with Hankey on the 20th October, 1914, I have always regarded as the sowing of the first seed—the first constructive step in the conception and evolution of what came to be known as the Tank. Its growth might have been greatly stimulated if I could have followed it up with a similar talk with Lord Kitchener, for which I would have waited had I been able to foresee his reaction to the subject. The fact that I did not do so was in my opinion a dire misfortune which had far-reaching effects. Had I had the chance I would have opened my heart; and I venture to think that, in spite of his later attitude, if I, fresh from the Front, a brother Sapper with a similar training and somewhat similar point of view, had explained the existing and prospective situation, he might have listened. At that time “K” was the greatest driving force in the country. He had the Government, the people, and the Army behind him. And if he had lent his authority, before which so many men quailed and obstacles melted away, the project would not only have been taken up, it would have been pressed, and we might have had Tanks in the field many months earlier.

As things were, it was difficult for me to defer my departure. I had no orders to do so, and I might have had to hang round for days before seeing “K.” I debated then whether I was wrong in not waiting. I have since become convinced that I was.

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The second seed was sown on the evening of my arrival at St. Omer, when I saw the Engineer-in-Chief. I reported what I had done in London and why I had done it, considering this the best way to get

the matter taken up by the Army in the Field. He was not particularly sympathetic ; but, nevertheless, he wrote to the War Office on the subject. By now I had sown two seeds : it was for others to see that they took root. I had done my utmost to get the idea taken up and translated into action ; but strictly speaking, these activities were outside the scope of my official duties. For the next six weeks, whilst continuing my work as Eyewitness, I did nothing more in the matter, beyond discussing it confidentially with certain officers whose opinions were valuable by reason of their experience in action or otherwise. I anxiously awaited some definite result, for the German defences daily grew stronger, and our chance of carrying them by assault more hopeless.

Shortly afterwards I heard that some Holt Tractors had been ordered by the War Office for transport purposes.¹

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The Battle of Ypres of 1914 was now in full blast. It was a soldier's battle, and the Swan Song of the old British Regular Army. Whether it was Haig or French or Foch who was responsible for the determination to hang on to the last corner of Belgium during those days, so far as the struggle round Ypres was concerned it was the dogged tenacity of the regimental officer and soldier which saved the situation. On the 30th October, during the height of the German attack, Percy and I visited the headquarters of the 2nd Division at the Château of Hooze in order to glean what news

¹ These were actually landed in England on the 26th October. The Transport Department at the War Office had tried since 1909 to get an allotment of money for the purchase of a few of these machines, but the item had each year been cut out of the Estimates. Whether the information I had passed on in July, 1914, had helped to bring about the provision of funds I do not know. But I wanted these tractors now for purposes other than transport.

we could. The position was critical, and I was impressed by the unaffected calmness at this tense moment of General Monro, commanding the division.¹ The Germans were pressing, supported by a very heavy bombardment. From divisional headquarters we went forward some distance and saw the supports of one of the Guards battalions advancing. Wounded were streaming back, and as we returned we picked up two men, who had been hit in several places, and took them in our car to the casualty clearing station. Both were positive that they had been wounded by darts dropped from an enemy aeroplane. Whether this was true or was due to the imagination of semi-hysterical men we were unable to find out. But at the time this method of fighting was being employed by both French and Germans.

The battle was at its height. Everyone was desperately anxious, wondering whether we could hold on and what the end would be, but there was no fuss and no panic, only grim determination. The din was terrific, though the enemy bombardment was nothing like those to be carried out by both sides during the next four years. The noise of our own artillery, consisting almost entirely of field guns firing spasmodically, was submerged in that of the detonations of the German shells. The Germans were using a large number of 5·9-inch howitzers. I am not, as a rule, especially sensitive to noise, but I found these shell-bursts peculiarly exasperating. The cumulative effect of the reiterated detonations all on one note—in addition to the many other factors at this moment tending to try the nerves and upset the mental balance—was maddening. Since that day I have understood the meaning of what was later called shell-shock.

There are certain sounds, I believe, which are beyond the power of reception by the human auditory nerves,

¹ The late General Sir Charles Monro, Bart., G.C.B., G.C.S.I., G.C.M.G.

some which are pleasing or displeasing, and still others which are hurtful. That of the German shells not only dazed but irritated to the point of torture. Having a great opinion of the thoroughness of the preparations of the Germans for war, of their method, their science, their power of research, and their ruthlessness, I wondered whether in their long-prepared bid for the conquest of Europe they had deliberately laid themselves out to enlist acoustics on their side. It did not seem an entirely fantastic idea that they might have worked out the exact thickness of metal for the walls of their shells which in combination with the detonation of certain weights of explosive would give the note most trying to the nerves of the average man. I thought that this attack by sound—a development of warfare which had been anticipated by Mr. H. G. Wells in his book *The War of the Worlds*—was plausible, if far-fetched, and might be the explanation of my sensations. Since then this question of the influence of sound waves on human nerves has, I believe, been further explored; and investigations have been carried out in “Supersonics,” or the science of inaudible sound waves of such high frequency that they can kill.

In any case, on the 30th October, 1914, I realized that I was indeed well placed. This “Eyewitness business” had its difficulties and drawbacks. But it was a cushy job! I was not forced to stay at any point where I was subjected to the risk of death, wounds, or even nerve-shock. That I could take just as much or as little of an action as I chose, and then without opprobrium retire to comparative safety and comfort, did not prevent me from feeling for, and sympathizing with, others who were less happily placed. As I drove away I turned round to look back at the Château of Hooze standing a little to the north of the road. The approach was packed with cars—a splendid advertisement to catch the eye

of any chance enemy airman who happened to wander above and proclaim that here was a British headquarters, or at any rate a spot where important people were gathered ; and the fears to which I had given expression without effect on leaving Fère-en-Tardenois recurred.

Next day, when the battle was waging still more fiercely, a German aeroplane did fly over the Château. A few moments later a shell fell in the garden. Unluckily the headquarter staffs of both the 1st and 2nd Divisions happened to be in the house and went out to see what damage had been done. The next shell exploded close to the entrance, mortally wounding General Lomax,¹ who commanded the 1st Division, and killing several staff officers. General Monro was stunned.

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Limited as we were, first by our own desire not to give anything away, and secondly by the censorship—hampered too by the dearth and slowness of arrival of accurate news—it was not easy to produce anything immediately after the event. An article, such as it was, describing the fighting round Ypres up to the 31st October, was finished on the 2nd November. It was censored, revised, and despatched by the King's Messenger on the 7th. Before it was given out to the Press at home I cabled to the War Office to stop its issue and return it, because, though it had survived the censorship in France, I felt that, in the event of the Germans again pressing their offensive, it was too explicit. After amendment, it was sent back to the War Office on the 9th, and on the 12th appeared in the London papers. In addition to what was cut out by the censors, the papers frequently omitted portions of what I had written and sometimes divided up my articles. On

¹ The late Lieutenant-General S. H. Lomax, C.B.

one occasion a passage which might have given people a true picture of the War, was censored as being "too strong meat" for the public. Sometimes, also, the very points which we had been at pains to hide so that the enemy might not be gratuitously informed of where he was hurting us were given away by the papers. As an example, on the 6th November one paper broadcast to the world the effectiveness of the German artillery fire and that it frequently buried the men in the trenches—both of which interesting and, to the enemy valuable, facts we had carefully concealed.

The Press Bureau, also, now and then forestalled Eyewitness's articles, which were subject to repeated censorship, by issuing bulletins made up from the Commander-in-Chief's Official Despatches, which naturally were uncensored in France. It thus not infrequently happened that the Eyewitness articles, when they appeared, contained less detail than summaries which had been published earlier. During the whole of the fighting of October and November round Ypres action was so continuous and so confused that it was not possible to obtain even the approximate truth till long afterwards. My recollection of that time is that the gravity of the situation was hardly appreciated at G.H.Q., and that in spite of the terrible nature of the struggle it was not realized by the troops of either side actually fighting. We were not aware that the enemy had actually got through the line, and the Germans themselves were ignorant of the fact.

It was almost immediately after the repulse of the Prussian Guard on the 11th November that Lord Roberts paid his first and last visit to G.H.Q. and the Army. Few of those at the front, at this time almost all Regulars, had ever seen him. To them he was no more than a name—but a name to conjure with. And the depth of feeling aroused amongst these already

war-worn veterans at the sight of the frail little figure of "Bobs" was something not to be forgotten. It was a lesson to those who belittle the power of personal influence, even in the brutal, soulless, mechanical mass-warfare of the present day. The news of his death had a correspondingly depressing effect.

The funeral service was held in the *Mairie* at St. Omer on the 17th. It was a stormy afternoon with occasional flurries of snow. While the coffin was being carried down the steps a poignantly mournful note was sounded in the "*Salut*" of the trumpeters of the Cuirassier Regiment on guard and the "Last Post" of the buglers of the British infantry. Behind the *Mairie* building was a piled-up background of lowering slate-coloured clouds, pierced by a shaft of sunlight. And as the coffin was placed in the hearse, the prismatic arch of a perfect rainbow gleamed out against the background, and an aeroplane flying high overhead flashed across the ray of sunlight, glistening gold like some celestial messenger. To the spectators of this sombre scene they appeared as symbols of hope.

Lord Kitchener now expressed a wish for more detailed accounts, and for the names of units to be mentioned. It was found, however, that there were so many difficulties in the way of obtaining correct details that the matter was dropped. To give the names of units accurately would have necessitated the corroboration of the officers responsible in order to ensure that justice was done. It would also have called for an amount of checking which would have been impossible to carry out.

The King's visit in November aroused the greatest manifestations of loyalty and devotion, and acted as a tonic upon us all. His Majesty did not content himself with visiting different headquarters, and wherever possible reviewed the troops who were out of the front line. On one of these tours the King and

the Prince of Wales were together in a covered car. As this made it impossible for them to be seen, His Majesty, despite the cold weather, decided to change to an open car. The only one with the entourage was mine, and in this the King continued his journey.

On the 14th December we attacked on a small sector of the front opposite Messines and Wytschaete. I was warned of this beforehand and saw it from a hill not far from Bailleul, which was high enough to provide a kind of panoramic view not easy to obtain in that country. The attack was to be carried out to assist an offensive by the French, but owing to the fewness of our guns and the scarcity and nature of our ammunition, the brief bombardment was quite ineffective. The infantry advanced across the open, up a rise, towards the two places. They proceeded in splendid order for a short distance, then wavered, stopped, and lay down. After a brief interval, they returned to their original position, having suffered many casualties. The loss of life was doubly regrettable, since an attack on this scale could serve no useful purpose. Three days later I witnessed a bombardment of the German position south of Messines. This I saw from a snugly concealed and heavily protected observation post on the Scherpenberg Hill near Mount Kemmel. The infantry did not advance.

Both these offensives were made at the request of the French in order indirectly to help their operations to the south. As an act of co-operation, or possibly a gesture, to help our Allies, they may have been warranted, but so far as we were concerned they were a waste of life.

After their desperate effort to gain the Channel Ports, which culminated in the onrush of the flower of the German Army on the 11th November, when the Kaiser came to Courtrai to witness the triumph of his troops, the Germans left us in peace, so far as major operations were concerned, and for some

weeks both sides were content with the constant and bloody bickering of trench warfare. During this interregnum the weather rendered the conditions of life in the trenches more bitter than the fighting. I spent many hours being driven about in an open car, but was lucky in not having to exist for days on end in a couple of feet of half-frozen slush, partly buried in mud, with the perpetual fear of a sudden and violent death hanging over me, as did the troops in the front line and immediately behind it. When I got wet I was able to have my clothes dried after a reasonable interval; and I had a weather-tight room in which to sleep.

Nevertheless, I usually had wet feet, with the result that they became so swollen that I could wear none of my boots. I therefore repaired to the Ordnance store at St. Omer—some trucks on a siding—and purchased a pair of ammunition boots. They were heavy and hard, and had thick soles, but they were big. In connexion with these same boots I had an amusing passage of arms with Brigadier-General G. M. Harper, a brother Sapper, commonly known as "Uncle."¹ As may be gathered from his nickname, Harper was an officer who was held in affectionate regard by all who knew him, and he served during the War with great ability and distinction. In the early days he was a sort of fifth wheel in the G.H.Q. coach, having no very definite duties and little responsibility. He had time, therefore, to turn his mind to things which did not matter, and attached much importance to what was "done" and what was "not done," and the right place to get clothes, breeches, boots and spurs, especially the two last. I clumped into his office one morning wearing my new boots. Now Uncle had the unpleasing habit of poking fun at my literary efforts.

¹ The late Lieutenant-General Sir G. M. Harper, K.C.B., D.S.O.

"Hallo, Eyewitness," he said, "your last shocker was pretty poor stuff."

"Yes, sir," I replied, "wasn't it?" for I made a practice of agreeing swiftly with my seniors!

Then his critical gaze, with ill-concealed disfavour, wandered over my uniform—plainly not made by the "right" tailor—and finally stopped in sheer amaze at my boots.

"What the devil have you got on your feet?"

"Boots," said I, promptly and accurately.

"Yes, but who made them? I never saw such things."

"These are the very latest from town," I glibly answered. I knew my interlocutor's weakness.

Interest was at once aroused.

"Whose are they—Fortnum and Mason's?"

Never particularly interested in the fashions, I was even less so in December, 1914, and was not aware that that renowned firm of purveyors of *Delikatessen* had turned boot-makers. Thinking that my senior officer was getting at me, I replied:

"Oh no. These aren't Fortnum and Mason's. Their boots are quite out of date now."

"Then whose are they?" snapped Uncle, his dignity as arbiter of modes wounded.

"Oh, just, just—Justerini and Brooks," said I at a venture, mentioning the name of the first establishment of the same class that occurred to me.

"Good Lord! D'you mean to say that they've taken to making boots too?" said Uncle, in a tone implying that the matter must be investigated without delay.

"Well," I replied, "I don't see why a — wine merchant should not make boots as well as a — grocer."

On inquiry, I found that the first-named shop in Piccadilly was actually supplying "footwear" to the officers of the Expeditionary Force. The sequel came

in 1919. A brother officer who dealt with the firm of wine merchants referred to by me tried in vain to buy two bottles of brandy. At last he had the happy thought of telling them this story. The effect was magical: he got a bottle of the spirit for which he was thirsting. He did not tell me of this until after he had finished it!

* * * * *

Much has been written about the cruel exposure to which the armies were subjected during the winter campaign of 1914-15 in Flanders; but no account could convey what existence meant in that abomination of desolation. While the Malebolge of Dante's eighth circle of Hell was almost fulfilled by the mud, the ninth circle was well illustrated. I was amazed at the extreme hardship which human beings, even those rendered soft by civilization and accustomed to some measure of comfort—if not of luxury—could stand. I continually marvelled at the good spirits and cheerfulness of our men, especially the infantry, who always held the "dirty end" of things. In one direction Monsieur Bloch, the Warsaw banker, who years before had in so many ways accurately forecast the nature of a future war between great nations, had been wrong, and that was in his underestimate of human endurance.

Such conditions notwithstanding, the battered and bleeding British Regular Army, marooned in mud, perished with cold, kept its tail well up. It had survived and beaten off the most desperate efforts of its colossal enemy. Looking forward with hope to the hundreds of thousands making ready to come to its assistance, it saw 1914 pass and the New Year come in. My heart, also, was full of hope. I was awaiting the fruit of the seed I had planted—to help those hundreds of thousands.

Machine Guns and Wire

[January-March, 1915]

THE advent of the New Year gave me a further opportunity to push my scheme, for on the 2nd January I went home on a few days' leave. I lost no time in ascertaining from Hankey what had happened since our last meeting. As arranged, he had personally put the suggestion for a machine gun destroyer to Lord Kitchener, but the latter had scouted the idea and had made it clear that the thing would receive no backing from him.

This was truly an *impasse* ; and I more than ever deplored the fact that I had missed seeing Lord Kitchener myself in October. What had then been possible was now out of the question. The subject, having once been broached and turned down, would probably be regarded by him as closed. Whatever he might have done in the first instance, there seemed no reason why he should listen to me at this juncture. On the contrary, I feared that any approach on my part at this stage might result in an embargo by which I should be most effectively prevented from taking further action in any direction. I could picture him saying, "I have already given my decision. You had better drop the thing." Rather than incur sterilization I decided to refrain from mentioning the subject to him. I did not do so, in fact, till the end of the year, when a "destroyer" was almost ready for trial and matters had progressed so far that he had to

be informed. I have no reason to suppose that even then he realized to what extent I had been pressing with every means in my power the prosecution of a matter which he had refused to countenance.¹

* * * * *

The attitude in this particular instance of the "Engineer of Victory" at Omdurman—that astounding example of the effect of fire-power against numbers, which has been called "... the most signal triumph ever gained by the arms of science over barbarians"²—is comprehensible. At the beginning of hostilities the Secretary of State for War, and those under him at the War Office, had to cope with a task of unprecedented, unimagined and almost fantastic magnitude, of which the greatest share fell on the shoulders of the Minister himself. The extent of his preoccupations—whether due to the departure for France of all the previous senior members of the War Office Staff, or to his tendency to concentrate everything in his own hands—was overwhelming. Responsible for the conduct of all current operations on land, he was also saddled with the task of raising, training, feeding, clothing and arming the immense New Armies of whose creation he had been the instigator, and was faced with a thousand and one intricate problems of administration, with many of which he should not personally have been troubled. He had, in addition, to attend innumerable meetings of Cabinet and War Council for consultations, deliberations and explanations. Never very receptive of new ideas, it is hardly surprising that in this time of stress he did not welcome, nor even give heed to, the entirely novel proposal put before him.

The acceptance of it, indeed, called for a full understanding of the problem confronting the forces in the

¹ See Chapter IX.

² *The River War*, by Winston S. Churchill.

field, in other words, a complete realization of the nature of the German defence and what it implied. Lord Kitchener did not have this, and therefore did not see any necessity for complicating matters by the introduction of a new weapon and a new method of fighting.

Moreover, the case was not presented by any senior military authority with first-hand knowledge of what was happening and of what threatened in France, for the reason that those in control in the field did not themselves realize the truth. The picture of the existing and future situation and the suggested remedy came to him indirectly, from a comparatively junior officer. Though Hankey had great experience and occupied a most important position, he could not speak with the authority of the Commander-in-Chief or of any officer from the Front.

It is always easier to take the line of least resistance, which means the saying of "no" rather than "yes" to a new proposal, especially when the pressure of current events is so great as to prejudice calm investigation and consideration. And the very nature of the profession of arms, with its long periods of make-believe training based on the experience of a more or less remote past and unrelieved by the continual application of corrective factors derived from the progress of knowledge, leads to mental crystallization and blind adherence to tradition.¹ There is, moreover, an inevitable tendency in every profession towards a belief in the infallibility of rank and seniority which, again, amounts to reliance on possibly more or less stale experience. One manifestation of this in the Fighting Services is a deeply rooted bias against novel ideas, especially when they emanate from below. To some military minds, indeed, suggestions from juniors smack of presumption, if not of insubordina-

¹ This is not to deny that in the British Army there was great progress in all directions between 1902 and 1914.

tion. To others they are—if encouraged—potential threats to their own positions.

But in this special connexion Kitchener's experience could not be called stale. In the Sudan campaign of 1898 he of all men had reason early to appreciate the meaning of the power of modern firearms, including machine guns, in defence, considering that it was this power, and this alone, that saved his force at Omdurman and gave him a most notable victory. It may be thought that when science was brought into play by both sides, and it was a case of an attack carried out with the assistance of artillery support, the brutal argument of fire-power in defence lost its weight with him. But this was not so, for shortly after Omdurman, in discussing that action with a friend,¹ he confessed that he was wondering what was going to happen when *we* had to undertake the offensive under similar conditions.

He did not have long to wait to discover. For in the Boer War we had to attack against the finest riflemen in the world, with results that were painful.

* * * * *

But, whatever lay behind it, the rebuff received in this direction had not discouraged Hankey. The War Council—a newly born organization—was now assuming the functions of the Committee of Imperial Defence,² and as secretary of both, part of his duty was to bring to the notice of the Prime Minister any matter which he considered of sufficient importance for his attention. Enlightenment on the direction in which the War was developing was one of the things he thought all important. Having by now also heard from Tulloch in reinforcement of my views, he sat

¹ Professor Spenser Wilkinson.

² The Committee of Imperial Defence was purely an advisory body and theoretically had no *locus standi* after hostilities had begun.

down and wrote a memorandum, which was completed on Christmas Day and submitted to Mr. Asquith a few days later.

This memorandum, written in the last week of 1914, was a remarkable summary of the situation on the Western Front. It was more : it was prophetic, and in some directions in advance of the generally accepted military point of view. Arguing from our inability until then to force back the Germans, and from the failure of their more concentrated and weighty attempt to capture the Channel Ports, the writer foresaw a deadlock. His contention was that if the accepted methods of attack of either side had failed so signally against improvised and hastily constructed defences, there was little chance of the same methods succeeding, once the defences were fully prepared and consolidated. Instancing Torres Vedras, and the Chataldja lines in the Balkan War of a hundred years later, he pointed out that such deadlocks were not unknown to history, and that there were two ways of circumventing a situation of this kind : to attack elsewhere, or to devise some special means for overcoming it. In regard to the second alternative, which is germane to my subject, reference was made to the old devices of siege warfare. To meet modern conditions he suggested the following among other means :

“ A. Numbers of large heavy rollers, themselves bullet-proof, propelled from behind by motor-engines, geared very low, the driving wheel fitted with ‘ caterpillar ’ driving gear to grip the ground, the driver’s seat armoured, and with a Maxim gun fitted. The object of this device would be to roll down barbed wire by sheer weight, to give some cover to men creeping up behind, and to support the advance with machine-gun fire.”

His further, practical, suggestion was that a small expert committee should be formed to deal with the existing state of affairs.

This proposal was in essentials what I had put before Hankey two months earlier, though he did not specify, as I had, any particular type of existing caterpillar machine and did not contemplate a machine gun—as well as an entanglement—destroyer. His action in taking up the subject with still higher authority after he had failed to obtain the support of the Head of the Army was to have very far-reaching results, as will be seen.

Nevertheless, in spite of what had been done, I was much disappointed to hear of Lord Kitchener's lack of enthusiasm and the consequent absence of any constructive progress. Though—as I have explained—it seemed hopeless for me to go to Lord Kitchener directly, in order that the impulse might flow downwards from the top, it was still open to me to try the most "competent authority" lower down in the military hierarchy and so create a chance for the impulse to creep upwards along the authorized channels. I, myself, was not such a channel, but a humble free-lance, or a member of what later on in the War was dubbed by the reactionary but most powerful and articulate military coterie the "happy thought brigade." The Director of Fortifications and Works, who was the senior officer of Royal Engineers, as such, at the War Office, was obviously the proper person to explore any proposal dealing with a mechanical fighting device for trench warfare.

Accordingly, on the 4th January I called on General Scott-Moncrieff,¹ who held that position. To him I put my views more fully, in greater detail, and with more conviction than I had to Hankey ten weeks earlier, for the nature of the fighting which had taken place in the interval and the obvious symptoms of creeping paralysis now affecting both sides had strengthened my opinion. I begged that the problem should be

¹ The late Major-General Sir G. K. Scott-Moncrieff, K.C.B., K.C.M.G., C.I.E.

explored without delay, and that a practical solution should be sought by a committee of experts in the branches of engineering concerned, who should have a free hand to experiment in the conversion of the Holt Tractor—or any other similar contrivance then existing. As one member of this body, I designated Tulloch, who was a specialist in armaments and an expert in motor-cars.

The idea of a caterpillar machine gun destroyer was new to General Scott-Moncrieff. But he pointed out that the policy of the War Office was not to originate or make suggestions to the Army in the Field, but only to investigate what was specifically asked for by G.H.Q. ; and that though I had come from the Front, I had no official backing. Nevertheless, he was sympathetic ; admitted that the task of attacking the German defences, which seemed daily to grow stronger, was causing much anxiety ; and finally concurred in the procedure I suggested, inviting me to bring Tulloch to see him on the following day. I had now planted the third seed, and was delighted at the early sign it gave of sprouting—things were really moving !

Next day, when I saw Tulloch at my club preparatory to taking him to the War Office, I also met there by chance Colonel Louis Jackson,¹ an R.E. officer who was responsible for trench warfare under General Scott-Moncrieff. On hearing of the object of our proposed visit, he said that it really came within his particular sphere of duty and suggested that I should leave him to deal with it. This I did gladly, for I was extremely busy ; and I asked him to take Tulloch to the Director of Fortifications and Works, in the hope that the latter, with the collaboration of these two officers, would be able to effect something.

What actually happened at the War Office I was not to learn until much later. But when I crossed to France on the 9th January I was full of hope.

¹ Now Major-General Sir Louis C. Jackson, K.B.E., C.B., C.M.G.

I knew that the first seed, deposited with Hankey six weeks earlier, had fallen on barren ground, so far as the Army was concerned, and that the second, planted at G.H.Q., had not germinated ; but the third, just sown at the War Office, seemed likely to do better.

What I did not know was that though the first had failed to grow on military soil, it had struck root in another quarter—namely in the fertile mind of Mr. Winston Churchill, then First Lord of the Admiralty. Naturally, it had not occurred to me that either he individually, or “ Their Lordships ” as a body, were likely to interest themselves in an engine of land warfare ! ¹

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I must retrogress, and digress, for a space to give a brief account of the immediate results of Hankey’s memorandum of the 28th December. Among the members of the War Council who received this document, which was of historic significance, was Mr. Churchill. Under his control as First Lord were the Naval Air Squadrons based on Dunkirk, and the Armoured Car Squadrons which had then been formed to protect the air bases. It thus happened that owing to the responsibility which had been placed upon the Admiralty for the defence of the home country against air attack, the head of that department was concerned in land operations and methods of fighting in the Western Theatre of War—an anomaly, perhaps, but in the circumstances and in this connexion a fortunate one for the nation.²

Towards the end of September, 1914, just before the Front had finally frozen into the position it was to

¹ The first inkling I got of this was five months later, in May. See Chapter VII.

² For further information as to “ The Dunkirk Circus ”—as it was called—see *Politicians and the Great War 1914–1916*, by the Right Hon. Lord Beaverbrook.

maintain for nearly four years, the Germans sought, by cutting gaps in the roads, to curtail the activities of our naval armoured cars, which, being wheeled vehicles, were confined to roads. Our reply was the attempt to provide cars carrying bridging material to enable these gaps to be crossed. By the second week in October the Front had become almost stabilized ; and towards the end of the month the question of crossing trenches also arose, chiefly in connexion with the wheeled tractors of the new 15-inch howitzers, which were being made for the use and benefit of the Army.¹ At the same time, under instructions from Mr. Churchill, a design was produced for a wheeled tractor capable of crossing a trench by means of a portable bridge to be laid down in front of itself and hauled up after it had passed over. Early in November the construction of an experimental machine of this type was started.

By the beginning of January, 1915, at the moment when Hankey's memorandum came before the First Lord, the Admiralty had got so far in the investigation of the subject of cross-country movement as experimenting in wheeled tractors which would carry guns and fighting crews, and cross trenches by portable bridges. Thus far, the sequence in what Mr. Churchill has termed "the Chain of Causation" in the development of the Tank had been—myself, and then Hankey.

At this point, Mr. Churchill, with his mind already attuned to a cognate subject, became a link in the chain. Having studied and being in agreement with what Hankey had written on the 5th January—the very day after I had laid my views before the Director of Fortifications and Works—he took a further step

¹ Mr. Churchill in *The World Crisis* refers to these machines as caterpillar tractors. They were, in fact, wheeled vehicles carrying a portable bridge ; and their only resemblance to the Tank was that they were intended to perform part of the task performed by the Tank. They were not sufficiently successful in doing this to be adopted.

and wrote a letter to the Prime Minister. This document, also an appreciation of the situation on land which loomed up ahead of us, included amongst other suggestions one for steam tractors on the caterpillar system, armoured and carrying men and machine guns. The proposed engine of war and the method of its use corresponded in essentials with what I had put forward to Hankey in October, and he had embodied in his memorandum. In this letter occurred the two following statements :

“ It is extraordinary that the Army in the Field and the War Office should have allowed nearly three months of trench warfare to progress without addressing their mind to its special problem.”

“ An obvious measure of prudence would have been to have started something like this two months ago. It should certainly be done now.”

At the time when Mr. Churchill received Hankey's suggestion for a caterpillar fighting vehicle he did not know for over two and a half months one of the Army in the Field had been addressing his mind to this very problem.

So it came about that we two, each independently and without the other's knowledge, were working in the same direction—one which we both felt to be vital to the nation's success. This surely was a malicious prank of fate, for had we been able to collaborate in that autumn of 1914—Mr. Churchill, bringing to the scheme his initiative, driving power, and all the weight attaching to his position as a Minister—it is possible that the benefit of this new weapon might have been bestowed on our Arms many months earlier than was actually the case—with what saving of life God alone knows.

* * * * *

After my return to G.H.Q. I was fully immersed in my own journalistic duties. Only at intervals did

I take any active steps in regard to the machine gun destroyer ; but it was always at the back of my mind. I tried to discover what had happened at home since I left London. So far as I could find out the whole subject had been dropped. I felt powerless. In putting the thing forward through the Secretary of the War Council, I had not perhaps made use of the normal channel, though it was an official one. But in my subsequent action at the War Office and also at G.H.Q. I had been orthodox. The pity was that I had failed to see Lord Kitchener. I was in communication with him indirectly through the Secretary of the War Office by means of my articles, and it was possible for me to write to him privately ; but this would have been to go over the heads of those under whom I was serving, and such a course would probably have defeated its own ends.

During the first month of 1915 activity on our front was confined to minor actions, and a period of consolidation and waiting for reinforcements and munitions ensued. There was a sameness, therefore, about the operations, which did not lend itself to much writing. I took this opportunity to visit the lines of communication in order to learn something of the work of the Adjutant-General's department, covering reinforcements and casualties ; and the Quartermaster-General's department, covering communications, supplies and munitions, etc. This took me to Boulogne, Dieppe, Havre, Rouen and other places which had become hives of British military activity. One spot which I saw grow from a single siding in a field into a vast depot of munitions, and railway material collected for our advance, was Audruicq, a short distance north of St. Omer.¹

* * * * *

¹ This developed into such a gigantic munition and store dump of all kinds that it attracted the enemy's attention. In June, 1916, it was bombed and blown up, the explosion, apart from the mines

My mind was relieved as to the maintenance of my incognito by an article which appeared in the *Kölnische Zeitung* on the 16th January. The writer, in quoting from one of my articles, explained that the individual who had adopted the *nom de plume* of "Eyewitness" was a well-known member of Parliament, barrister and froth-pot named Smith, who knew nothing whatever about military matters.¹

Towards the end of January I met by chance the late Colonel Lewis, the inventor of the Lewis gun. He had been invited to G.H.Q. by Sir John French to exhibit a rocket gun, a type of trench mortar, designed by himself. I was particularly pleased to run across him on account of my own interest in the subject of machine guns generally. He was at G.H.Q. as an inventor and not as an American officer. Having no Mess of his own, he was rather like a stray dog; and I naturally invited him to a meal at the Mess of which I was a member. He was, as he expressed it, "tickled to death" by my small attention, in fact, to a degree which showed how lonely he had been. I took him down to the Machine Gun School which had been started by Major Baker-Carr at St. Omer. There I left him in his element among specialists. I believe that this was his first introduction to the people who mattered in his own particular line at British Headquarters. I found Colonel Lewis a charming companion, most amusing, full of information, and very convincing as to the value of his own invention. After three days he left us. By the time of our next meeting, in 1918, in New York, though his rocket gun did not survive long, he had furnished the British forces with some thousands of his machine guns.

at Messines, being probably the greatest that occurred on the whole Western Front. Thousands of tons of ammunition, costing three million pounds, were destroyed, and several men were killed.

¹ The late Right Hon. F. E. Smith, later the Earl of Birkenhead, was "Eyewitness" for the Indian Corps.

It is no secret that we started the War without trench mortars and other equipment for siege warfare, and first made their acquaintance when the Germans used them against us.¹ At this period we were striving by every means to make up for our deficiencies in various directions. It fell to the Sappers to design and manufacture weapons with which to reply to the enemy. It may perhaps be thought that the provision of the trench mortar—which is a species of short-range gun—was the duty of the Artillery, but the Royal Regiment does not, as a rule, take readily to makeshift ordnance, and is not addicted to improvisation. It is, in fact, rather spoilt by being accustomed always to have at its command weapons which represent the highest product of peace-time research, laboratory experiment and manufacture, and is distrustful of anything below that standard. This attitude is comprehensible because of the possible consequences of failure where explosives are concerned.

At any rate, at this time, improvised hand-grenades, bombs, and trench mortars in great variety were being designed and manufactured under the R.E. at dozens of little workshops in towns behind our front line. In this connexion I witnessed a sad example of the not uncommon tendency to useless foolhardiness in dealing with explosives. A young officer was carrying out experiments with a rocket-gun which fired a very large bomb loaded with ammonal. I was present at various trials. All those of us who were watching naturally took cover behind adjacent trees at the

¹ Hand-grenades had been re-introduced into the British Service after the Russo-Japanese War. But they were a very expensive article and were not stocked in large numbers. The cadets at the Royal Military Academy were practised in their use, the throwing of grenades having been established as an event in the annual athletic sports. Few other branches of the Service were trained in their employment.

moment of firing. On one occasion there was a terrific explosion, which shattered every window of the château close by—the bomb had detonated at the muzzle. On looking round our trees we discovered the experimenter standing erect by the mortar in a dense cloud of smoke. By marvellous good luck he had escaped untouched! A few days later I watched some further trials. There were present the same officer, myself, and an R.E. working party under a subaltern. I watched three shots, and each time the projectile—as large as a Rugby football—sailed through the air and burst some two hundred yards away. Close by was a bomb-proof dug-out in which I ordered everyone to take cover when the mortar was fired. The experimenter, who was not under my orders, obeyed unwillingly. Shortly after I had left he stood close to the piece when he fired it. The bomb burst at the muzzle, killed him, and knocked over some spectators farther off. The working party—under cover—was unharmed.

Half-way through February I had a severe attack of influenza, and was sent to Nice to recuperate. Here I found myself in a magnificent Officers' Convalescent Home which had been opened at Cimiez. It was housed in a large modern hotel, which had been taken over and was fully staffed with a commandant, doctors and nurses. It owed its inception and being to the patriotism and generosity of the late Lady Michelham, who ran the whole place, the officers contributing the amount of their ration allowance towards the expenses. Though I had not been suffering any hardships comparable with those endured by thousands of others, the sudden transition to the comfort and luxury in which I now found myself made me feel in Fairyland. Every day or so fresh officers would appear, replacing the poor devils who had gone back to the Front. The process they went through suggested that of "ginning" prunes. They arrived haggard, grey, wrinkled, broken down with anxiety

and strain. They departed plump, with wrinkles smoothed out, and looking happy. The gin in which they had been steeped consisted of good food, rest, and security. No doubt Lady Michelham received the heartfelt thanks of all those weary and suffering souls who benefited by her kindness, whether they gave expression to it or not. But I cannot refrain from adding my tribute on behalf of thousands of British officers. She did a noble work in helping to bring large numbers back to a normal state of health.

While I was at Cimiez the business of the Firm was carried on "as usual" by Percy. This period covered the Battle of Neuve Chapelle; and when I got back to G.H.Q. one of the first things I did was to visit the ground where our so-called victory had been won. From that visit and from what I heard I gained the impression that in reality it was lucky for us that we had not succeeded better in our avowed object of breaking through. In view of the force at our disposal and the depth of the German defensive zone which, even then, was no narrow crust, deeper penetration would have meant that those who succeeded in pressing on, far from finding themselves in open country, would have been enmeshed and held up in the enemy's "Tom Tiddler's Ground." This impression was reinforced by the reports of our later offensives. It applied especially to the bringing up of a large mass of cavalry to exploit the break.

At Neuve Chapelle, though various causes combined to limit our advance, it was the uncut wire and machine guns which actually held us up, especially on the left. Everyone is inclined to see what he is looking for, and I may have been too prone to attribute effects to one cause, but in my judgment the course of this battle definitely established the reign of the machine gun in combination with wire in defence.

More Machine Guns and Wire

[April-May, 1915]

AT the beginning of April Hankey paid a visit to G.H.Q. as the guest of the Chief of the General Staff. But I could discover very little from him about the progress of the destroyer project : it was out of his hands, and he had been too deeply immersed in other matters to follow it up. No headway, however, seemed to have been made. Soon afterwards a family bereavement called me home for a hurried visit ; but during the short period at my disposal I was unable to make inquiries personally, and I began to despair of anything being done. It was now six months since I had first moved in the matter, and we were no farther on. The minds of all were filled with the prosecution of the offensive so soon as our New Armies were ready. And yet, amidst all the efforts to produce men, and after men guns and ammunition, no steps—it seemed—were being taken towards the one measure which, so it seemed, would give the flower of the nation's manhood the greatest help in its coming task.

Walking down Pall Mall in this mood, I happened to meet Admiral Ottley, my late pre-War Chief at the Committee of Imperial Defence. This chance encounter came as a ray of hope, for he was then a Director of Messrs. Armstrong, Whitworths—a firm which possessed resources, experience, and facilities for every kind of engineering work, and had at its call some of the best technical experts in the country.

Surely, if the Government would not take this thing up, there was no reason why such a business organization should not do so, and at the same time win fame and gain profit for itself! I tackled the Admiral on the spot, and told him the whole story. I offered, if his firm would go into the matter, to furnish a specification for the performance of the kind of machine required, sufficiently detailed for engineering experts to set to and design it. Given such a specification, the task of arriving at something practicable did not appear impossible. At all events, I argued, it should not be so regarded until the attempt to carry it out had failed. He was receptive and sympathetic, and agreed with my view as to the desirability of what I described, but could not commit his firm and could give me no hint as to its attitude. I heard no more from him, and much discouraged, returned to France. Thus died the fourth seed, which failed to take root in commercial soil.

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During the month of April the conditions under which we were fighting were much mitigated; and the countryside, the freshly turned earth of the hundreds of trenches, and the craters and gashes in the soil, assumed an entirely new aspect. I took advantage of a lull in large-scale operations to run down to Boulogne in order to see the landing of a number of Territorial units. The weather was calm, and the troops in their thousands were ferried across at night in a succession of Channel passenger boats, which came in at short intervals one after the other. I sat and watched them disembark, and was struck by their serious and earnest bearing. Everything was done in perfect order, without the slightest hint of confusion as they quietly formed up and marched off the quay, through the patches of moonlight and shadow, up the hill towards the rest camp.

It was a soul-stirring sign of the awakening of the British race, though only a foretaste of what was to follow. The sight evoked pride ; but it also made the heart ache. As the silent streets re-echoed to the rhythm of men's footsteps I heard in prophetic imagination the staccato hammering of machine gun fire. And I wondered how many of these fine lads, inspired by the ideals of patriotism and sacrifice—though they themselves would be the last to proclaim it—would be alive in three months' time. It was a moving scene, especially to one who had some conception of the Inferno into which they were going.

* * * * *

With the Intelligence Branch had come out to France an expert photographer.¹ After a short time it had been found difficult to provide the funds to maintain him in the necessary equipment ; and his services had therefore been offered to me early in the year. I was only too pleased to be able to supplement the written word with pictures, and, since I had no fixed budget, I had arranged with the War Office for the purchase of what was required. This officer had worked for me for some weeks, but such a small proportion of the pictures he made passed the censorship, that I offered him to the Royal Flying Corps, to which he was transferred. He played an important part in the early stages of aerial photography.

At the beginning of May I reopened the question of the making of an official film record of our operations. So far back as February I had by order of the Commander-in-Chief got into communication with the War Office to ascertain the official attitude on this subject. Nothing had happened, and I now brought the matter again before that department ; but it did not really come within my sphere and I handed it over to be dealt with by the Intelligence. What took

¹ The late Major Campbell, a pioneer in the deciphering of aerial photographs.

place I do not know. This form of record would have been invaluable both for the information and interest of the people at home and for historical purposes. Though it would not have been possible, as a rule, to obtain any picture worth having of the actual fighting, much could have been shown of the life and activities of our troops when not actually in the firing-line. With properly accredited photographers, the question of censorship should not have been difficult.

Once again I was warned in advance of an impending operation—our attack of the 9th May—and early that morning Percy and I motored from G.H.Q. south-east to the village of Beuvry, where we climbed the church tower just before our guns opened fire at 5 a.m. It was a glorious sunny morning, and until the silence was shattered by the roar of artillery spread over a wide arc, there was hardly any sign to betray the presence of many thousands of troops. The brief bombardment—as we discovered to our cost—was entirely useless for cutting the enemy's wire or shaking the defence. On account of the smoke and the dust, Percy and I were unable actually to see our infantry advancing. In spite of their desperate gallantry and the fact that they got into the German first line at certain points, the attack failed—a result which was inevitable, considering the strength of the defence and our dearth of gun ammunition. After some three hours, by which time it was clear that the offensive was not going to succeed, we descended from our tower with some relief, as it was an obvious mark for the German guns.

From Beuvry we went northwards to another sector of our offensive, the headquarters of the 8th Division. Here also, it was a case of failure after superhuman efforts on the part of the infantry. One brigade made repeated attempts to assault over the same ground, each with less chance of success than the preceding one. We saw many of the wounded at an advanced

dressings-station and heard the same story from all those who were able to speak. As soon as our short bombardment of the German position—almost entirely with field-gun shrapnel—ceased, our infantry went over the top. As they clambered up, the Germans in their dug-outs, unhurt and hardly shaken by our shrapnel, swarmed up and manned their parapets, at some points standing entirely exposed; and not being under fire themselves, poured a steady hail of bullets into our advancing infantry, their machine guns firing from emplacements fitted with loop-holes just clear of the ground.

Some of our men got as far as the German wire; but in most cases our assault was stopped dead on the top of our own parapets or a few yards in front, where the ground was strewn with bodies. A feature of the defence was again the slaughter dealt out by the machine guns, firing directly and obliquely across No Man's Land. At a few points, notwithstanding this terrible fire, our infantry did succeed in penetrating into the German first or even second line. But in every instance they found themselves in worse case than before, being bombed or shot at from every side, and were either driven back or surrounded and cut off. In spite of the most desperate valour, the whole operation was a bloody fiasco.

Two days later, when at advanced G.H.Q., I put forward to the Operations Section a scheme whereby we might get better value from our artillery. Instead of wasting the only kind of ammunition we had—shrapnel—by shooting at the enemy snugly ensconced under cover, I thought we might by a ruse induce him to present some target for it. The proposal was that by previous arrangement and synchronization our guns should cease fire simultaneously all along the front of assault—say for thirty seconds—and then as suddenly open fire again. When they ceased our infantry were immediately to cheer, make as much

noise as possible and show up above the parapet as if about to assault. The Germans would probably leave their cover, as they had so often done successfully, in order to repel the assault. When our guns again started to fire, it would be upon men exposed in the open—a target against which shrapnel might be of some use. As they did so, our infantry would again take cover in their trenches. After one or two repetitions of such tactics, the enemy would be less keen to show himself immediately our bombardment ceased, and this hesitation on his part might give a chance to our infantry to get at least some of the way across No Man's Land before his machine guns should get busy. I heard afterwards that something of this kind was tried.

Six months' experience had not taught us that we were engaged in a species of siege warfare. This was due partly to our inclination to neglect the spade—a failing which was not new. It had existed for years. I can recall the fact that as far back as 1898 Lord Wolseley, when Commander-in-Chief, paid a visit to the School of Military Engineering at Chatham, where he heard a case made out for field entrenchments. A marked feature of the first part of the South African War had been this combination of ignorance as to the value of trenches and ingrained aversion to the inglorious drudgery of digging. So greatly, indeed, had we been handicapped by this failing, especially in regard to defence, that shortly after that war I wrote a pamphlet entirely devoted to this subject.¹ During the Great War we were not alone in our lack of perception, for the French were about as backward as we were in taking advantage of Mother Earth. Moreover, owing to their obsession as to the merits of the offensive at all times and in all seasons, they were also blind to the strength of a defensive attitude generally.

¹ *The Defence of Duffer's Drift*, by Backsight Forethought, first published in 1903.

The fighting of May, 1915, illustrated the truth of what Clausewitz wrote on the degeneration of resolution and firmness into obstinacy.¹ Our inability to know when we were beaten, and reluctance to depart from what had been laid down, arranged, and ordered—in short, from the accepted doctrine—amounted in some cases, even when inspired by the best motives, to suicidal folly. Our infantry, in accordance with the preconceived ideas of “the attack,” were asked to do the impossible. And there were those who, unconscious of the impossibility of what they demanded, would have continued this sacrifice. Six months after the Battles of Ypres, 1914, after Neuve Chapelle, and after the lessons of a whole series of minor actions, we ought to have realized that our established methods were useless in warfare of such a nature; that against the German defensive system, even as it then was, infantry could do nothing, until it was either shattered by a weight of artillery—which was not at our disposal—or countered by some other weapon more powerful and less vulnerable than the human body.

It was true that we could not for some time hope to obtain more guns and ammunition or alter the fact that what we had of the latter was mostly shrapnel. But, such being our plight, it was futile to expect material help for our infantry from our artillery, against staunch troops, well entrenched, such as those that faced us. Under the compulsion to attack we were forced to fight the rifle with the target, as was said of some of the Austrian attacks during the War of 1866,² the target being the bodies of the infantry, and the rifle in this case including the machine gun. Our efforts were about as hopeless as those of the Dervishes at Omdurman, in spite of the utmost gallantry of our troops.

¹ This also applies to 1916 and 1917.

² *Cannae*, by General Feldmarschall Graf Schlieffen. (*Vierteljahrshefte für Truppenführung und Heereskunde*. Part II, 1910.)

At home every nerve was being strained to produce the guns and ammunition requisite. But there was no great effort ¹ to discover any alternative weapon which might serve until we should have the guns or even supplement their action. In point of fact, when later we had both guns and ammunition in undreamt-of abundance, the enemy had had the time still further to perfect his defence in a manner which to a great degree neutralized their effect.

The fighting, of which I saw little personally, but of which I learned much from the many officers and men who had been through it, proved once again that what we most had to fear in carrying out our offensive operations was the combination of machine guns and entanglements. By now it had become a scourge and was taking a ghastly toll of our manhood. And the more men we flung into the furnace in pursuance of our attempt to drive the enemy out of France the greater would be our losses both positively and relatively. There was no valid reason to suppose that the Germans would not continue on the defensive, nor that they did not appreciate one of the main elements of their strength in this role. Still less was there any cause to imagine that a nation possessing the industry and resources that were at the command of the Germans would fail to create defences of the most elaborate type and to produce machine guns by the thousand and barbed wire by the hundred thousand miles.²

During those days my mind went back continually to the column of men I had seen swinging through the silent streets of Boulogne. How many of those newcomers, those eager patriotic youths, might there not be already lying in No Man's Land, or spread-

¹ Except on the part of the Admiralty, as will be seen later.

² It was not long before our infantry found themselves up against a special type of barbed wire such as had never before been used, and deeply burrowed dug-outs which even our heavy shells could not touch.

eagled on the German wire, riddled with bullets? They were Territorials. And now the advanced troops of the New Armies were beginning to arrive——?

This special outburst of offensive activity on our part continued for four or five days, during which I was for the second time with General Monro whilst his troops were in action. By the end of the first two days all the sting had been taken out of our offensive, and it gradually died away. It was realized that, for the time being at any rate, we were not strong enough for any advance on a major scale.

By now the fact that we were carrying on a species of siege warfare had so far been accepted that mining had been undertaken seriously. The very limited number of Regular companies of Royal Engineers available for this work was being largely supplemented—eventually to be entirely replaced—by Tunnelling Companies of the R.E., formed at first from the many miners serving in different units of the Regular Army, the Territorial Force and the New Armies already in France, and later from the large mining community at home. In the work of raising and organizing these technical units a leading part had been played by Major J. Norton-Griffiths,¹ who brought to the task great experience, immense energy, and very powerful personal influence. The arrival of this officer and of the newly raised companies—experts in their work—rendered it possible to organize our underground operations on some definite and co-ordinated line. Hitherto they had been carried out in a haphazard manner, owing to the fact that we were always trying to catch up with the Germans and prevent them from getting under our trenches. They varied, also, according to the views of local commanders, who knew nothing about military mining, which we had not had occasion to practise since the Crimean War.

¹ The late Colonel Sir John Norton-Griffiths, Bart., K.C.B., D.S.O., usually known to his friends as "Empire Jack."

The prevailing vagueness as to the tactics of this form of warfare is illustrated by the story that in a certain sector of the front we had driven galleries under the enemy's position on no definite plan and in conjunction with no above-ground operations, and that when the mines had been loaded and tamped all ready for firing no one knew when the charges should be fired! It was a case of their being "all dressed up and nowhere to go." Finally someone had a happy thought, and the mines were blown to celebrate the Brigadier's birthday!

Norton-Griffiths was a congenial spirit when anything new or unorthodox was on the tapis; and he and I came to the conclusion that with time and due preparation it might be possible to bring off a surprise to help our next attack conceived on conventional lines. The idea was that we should arrange for the sudden intervention of a useful force behind the German front. This was to be done by means of galleries started well behind our own front, driven at a depth in the clay far below that of the enemy mine system, and then inclined upwards to break ground at night behind his front in different woods, where the exits would be boarded over and concealed until the moment for action, which would be when we made an attack on the surface. Then, when the enemy was fully occupied on his front, British machine gunners and sappers would suddenly appear from out of the earth in his rear, "shoot up" his heavy-gun detachments and cut his communications.¹

There were, however, technical difficulties in the way of this, and the scheme was not adopted. Nevertheless, later on, again, I believe, at the suggestion of Major Norton-Griffiths, the soil proving suitable, deep mining

¹ An imaginary and far more elaborate version of this scheme put forward in May, 1915, was later independently conceived and described by Lieut.-Colonel G. S. Hutchinson, D.S.O., M.C., in his war story, *The W. Plan*, published in 1929.

was carried out, with the normal object—of exploding mines. This was for the attack on the Messines Ridge on the 7th June, 1917, when the large number of huge charges fired had a decisive effect.¹

After the German gas attack of April, 1915, the science of meteorology assumed great military importance. A keen interest was shown in prevailing winds and weather conditions generally, and during that summer stray men in officer's uniform, but of unmilitary mien, made their appearance about the countryside behind our front. The first of these experts whom I happened to meet fared badly at my hands. When crossing a field of green wheat some miles from G.H.Q. Percy and I espied a strange figure, garbed in khaki, with round shoulders and longish hair, standing alongside the footpath in the midst of the billowing grain. In his hands he was furtively holding some sort of apparatus. As we drew near he looked round in a manner to arouse suspicion.

"I don't much like the look of that fellow," I said to my companion, and quickly arranged that while I dallied he should stroll casually past the stranger, whom we could then approach from both sides. We did this, and as we bore down on the luckless wight, he hastily began packing his apparatus into a box.

"Good morning," I said, to which he responded with a curious sing-song intonation.

"What have you got there?" I asked.

"An annymometer."

"Anny what?" I said, mystified.

"An annymometer," he repeated in a still more sing-song tone. Both accent and vague answer increased my suspicion. Here, obviously, was a Boche, with some infernal machine, masquerading as a British officer. Still courteous, but still more firm, I said:

"Oh is it? Well, I don't care whether it is an

¹ There were nineteen, none of less than 40,000 lb. of explosive.

anny mometer or anny other thing. You just come along with me."

He protested: talked about prevailing winds, meteorology, isobars: and finished up almost falsetto with the words, "I'm fra' Brahdurd!" Nevertheless, we escorted him to the neighbouring village, to the house which he pointed out as his "office." Here, at first sight, our worst suspicions seemed to be confirmed. Pinned on to a table was a large map of the whole of our front. But it was covered with curly sinuous red lines—the isobars of which our captive had spoken. And from the next room came a brother "spy" of the same breed. Both were genuine weather experts, as British as I am. It was, I must confess, rather to my disappointment that the two scientists, much aggrieved, proved that they were loyal Britons attached to the Army to enable it to carry out the latest form of warfare. After due apologies, we two Regulars retired, worsted. As we left, I heard the words, now in triumphant cadence: "*I said* I was fra' Brahdurd!"

Half-way through May the military correspondent of *The Times*, Colonel Repington, paid G.H.Q. the visit which had such tremendous repercussions and opened up the whole question of the supply of gun ammunition. I heard nothing of his arrival until his article appeared in *The Times*. At the Front it aroused considerable bitterness, for it was thought to have given away the positions of some of our heavy guns.

I was at first puzzled by the fact that an unofficial correspondent had been allowed to come into the zone of the Army and write what seemed good to him. It appeared a sudden contradiction of the accepted policy which tied me hand and foot. Later, when I became aware of the deliberate indiscretion on the part of the Commander-in-Chief, and of the reason for it, I understood why such secrecy had been maintained.

As a matter of fact, though Lord Northcliffe, through

the pen of his military correspondent, did a great service in drawing attention to the vital importance of the supply of ammunition, actually the urgent need was for a larger number of heavy shells, heavy guns, and fuses, rather than for high-explosive projectiles for the field artillery.

Meanwhile the need for a machine gun destroyer seemed to me to increase with every day that passed. We had lost thousands of lives on each occasion that we had attacked on orthodox lines, and it looked as if we should continue to do so. I began to lose hope of ever making headway with my scheme. For one reason or another those at the top were not easy of access. I have already explained my reasons for not putting my ideas personally before Lord Kitchener. The Commander-in-Chief I had not directly approached, because I hardly knew him, and it would not have been the correct procedure. I did know General Robertson, the Chief of the General Staff, but his was not a personality that invited confidences from subordinates with ideas; nor did he radiate that atmosphere of encouragement without which few juniors would have had the temerity to approach an officer of such high rank. Very much as Lord Kitchener did, he inspired fear; and not all were certain that his gruff manner did really conceal a kind heart. I, myself, had no reason to fear him on my own account.

I refrained from bringing this subject before him for the reason which caused me to keep silence with Lord Kitchener, once I knew that the latter had expressed an adverse opinion. I dreaded a direct order to drop the whole thing. Though my efforts up to this time had not, so far as I could tell, borne fruit, such an order would have rendered me quite powerless. Meanwhile I confided my views to General Maurice,¹ who had recently joined the staff at G.H.Q. He was

¹ Now Major-General Sir F. Maurice, K.C.M.G.

sympathetic in principle, though no practical result seemed likely to ensue from our conversation.

A chance meeting with Major Ironside,¹ of the Artillery, reinforced my views. Major Ironside was on the staff of the 6th Division which, obviously under his inspiration, was very active in evolving fresh methods of fighting to meet new conditions. Among other devices they had employed smoke-bombs compounded according to the formula used at the siege of Badajoz. My interest was aroused particularly when I learned that bullet-proof shields were being constructed, which the advancing infantry could push in front of themselves as a protection against machine guns. Sorely tempted as I was to divulge what I was working at with the same object, for reasons of secrecy I refrained.

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At last, towards the end of the month, I realized that if anything was to be effected it was incumbent on me to take some more definite step. I therefore determined to crystallize my views in an official document for submission to the Commander-in-Chief, and began to put down my scheme in the form of a memorandum. I felt that I had been as wrong in not having taken this step earlier as I had been in not waiting to see Lord Kitchener the previous October. Since then, it is true, I had made several efforts to push matters ; but, fettered by the traditions of the Service and averse to trespassing on the province of others, I had made the mistake of relying overmuch on verbal representations to those whom the subject seemed to concern. I had failed to take into account the conservative inertia inherent in all of us and the fact that those responsible, perhaps through lack of opportunity, did not appreciate the dire need of the moment.

Among those to whom I now mentioned the

¹ Now Lieutenant-General Sir Edmund Ironside, K.C.B., C.M.G., D.S.O.

subject was Major Ralph Glyn,¹ who from time to time visited G.H.Q. as a kind of liaison officer between the Director of Military Operations at the War Office and the General Staff in France. I was amazed by what he told me in reply. He did not know what the War Office was doing in the matter, or if it was doing anything, but he had heard that the Admiralty was conducting experiments in the direction I was advocating. Though astounded, I was intensely relieved. Indeed, my feeling of relief overcame my astonishment that the Navy should be interesting itself in a weapon for the Army! Glyn promised to find out the exact situation on his return to London and to inform me of it.

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During the first half of May signs had not been wanting that a change was contemplated in the functions, or existence, of the official military correspondent. I discovered that a certain number of regular war correspondents had been invited out to the Front for a short period, and that six or seven of them were installed close to St. Omer.²

I had previously met some of them—Percival Landon, Hesketh Pritchard and Valentine Williams among others; and I was invited to dine with them at their château. It was a case of the professionals entertaining the amateur “black leg,” who had been essaying to do their work. After the criticism which had been directed at me during the past eight months, it was a pleasant surprise to find myself amongst a set of such friendly and hospitable hosts. These gentlemen had been allowed to come out for a limited period of a few days and expected to return to England shortly. Whilst at the Front they were personally conducted through different sectors by an officer

¹ Now Major Ralph Glyn, M.P.

² Some correspondents had come out for a short tour of the Front a few weeks earlier.

specially told off for this duty. I was amused to discover that though my articles were censored by three generals, what they wrote was read only by the officer in charge of them before the Chief Censor's Office passed it.

This party did not return to England at the end of their allotted time, and they were still in France when I finally and suddenly gave up the duties of the Eyewitness some six weeks later. Meanwhile, they continued to send in articles concurrently with mine, theirs not unnaturally receiving greater prominence in the papers. I cannot say that I noticed in them any very marked improvement on what I had been putting forth for nine months, but owing partly to their writers' literary powers and partly to the fact that certain aspects and occurrences, which I took as a matter of course, were sufficiently novel in their eyes to warrant writing up, their work was more descriptive than mine. From now on until the end of hostilities the professional correspondents carried out in practice the system which had been arranged before the War started.

The end of the month was marked by the first visit to G.H.Q. of Mr. Asquith, who was accompanied by Hankey. I once more took the opportunity of asking the latter about the progress of the machine gun destroyer project. As before, he could tell me nothing definite; but he welcomed the news that I was about to play another card.

The Passing of Eyewitness

[June-July, 1915]

THE 1st June, 1915, was for two reasons a fateful day in this story.

The first and less important was that I heard unofficially from the War Office that the post of the Official Correspondent was shortly to be abolished. This only confirmed what I had already surmised.

On reviewing the situation, I felt that, in spite of the limitations under which I had striven, the nine months I had spent in France had been of absorbing interest and one of the most vital experiences of my life. But my position had not been easy. On one flank I was cramped by censorship—not in my opinion always of an intelligent order; on the other, I was sometimes sniped by the expert and critical journalists.

It was difficult for me to judge of the value of my work to the nation. From what I read in the newspapers I was inclined to think that it had been of small account, but impressions received directly and indirectly from members of the public—mostly unknown to me—were more encouraging. Their attitude was that what I wrote was straightforward and untainted with irresponsibility. They sensed that it was not the whole truth, but recognized the necessity for reservations, and were content to accept such guidance, realizing that it made for safety.

The liberty to go where I wished had been invaluable. It had enabled me to acquire direct much

knowledge of a nature to be obtained only from the many below. I had, in consequence, been able to diagnose one of the principal factors militating against our success, and to confirm my diagnosis. This factor was the power of the machine gun when sheltered under shell-proof cover or kept under it until required.

In other respects I welcomed the approaching relinquishment of a task in the execution of which my hands were tied, the psychological importance of which was not altogether appreciated by most of the military authorities, and in the performance of which I was occasionally abused. In the last connexion I realized that the disapproval was not directed against me personally, but against a system.

I had no idea what I should be ordered to do next, and was not to know for some seven weeks longer. I thought it probable that I should be appointed to a division, which would mean active work with front-line troops.

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Looking back, I cannot help thinking that the system, then about to cease, for the collection and publication of news, whilst ensuring the prevention of leakage of information which might be of value to the enemy, was wrong. It was a hasty improvisation where improvisation was not called for by any lack of previous preparation, since the necessity in case of war for establishing machinery for dealing with the dissemination of news was one of the contingencies which had been foreseen. We abandoned a system which had been organized deliberately in peace-time, and then had to fall back on a substitute. The attitude of the War Office to the Press has been ascribed partly to tradition, partly to the antipathy of the soldier to an institution which makes a business of collecting and selling news, and partly to the apprehension of indiscretions and criticisms. The first and

part of the last of these assumptions are perhaps more accurate than the second.

The subject had been taken up between the Press, the Admiralty, and the War Office, over a year before the War, with the result that an agreement had been made and an organisation created to withhold from publication any information on Service matters, the knowledge of which would be against the national interest. This organisation was still in existence in 1914, and a few days before the outbreak of war it concerted measures to carry out the above policy. These were most faithfully observed, and the result of the universal reticence by the Press of this country was that even until late in August the Germans were unaware of the number of British troops that had gone to France and where they had landed. So far as news from the Front was concerned, the intention—accepted by the Press and the War Office—was that certain selected war correspondents under a special "Press Conducting Officer," with a small staff, should proceed overseas, that full facilities should be given to them by the military authorities, and that censorship should be carried out in France. This was the scheme approved by the General Staff, and in accordance with it the officer had been appointed and the correspondents chosen, when on various excuses their departure was delayed and finally stopped.

Meanwhile, a Press Bureau, which included a censor, had been established in London, a move not altogether welcomed by the journalistic world. It had the triple role of distributing news, advising the Press and, in case of necessity, initiating proceedings against it.

In taking these steps Lord Kitchener was guided entirely by the decision of the French Commander-in-Chief that no correspondents should be allowed to accompany the troops. Certain unauthorized individuals did make their way to France, and reached

the zone of operations, only to be arrested and deported back to England. Amongst these were the two dejected men I met in Coulommiers on the 10th September.

The dissatisfaction at the dearth of news was the cause of my being sent to France in September, 1914. But the Newspaper Proprietors' Association did not cease to urge that more information should be given to the public, and that the system by which it was then being supplied was inadequate. As a result of this continued pressure, three parties of Press representatives were allowed to make short tours in France in the spring of 1915, and in May six accredited correspondents went out to G.H.Q. to stay for a limited period. They were never recalled, and remained in France until the end of the War. I was not a little amused to learn that in November, 1915, certain stringent regulations for their guidance were issued from G.H.Q.—presumably by the Censor's Office. These were much the same as the unwritten and less clearly formulated restrictions under which I had laboured, and they made the presence in France of the newspaper men a farce. The War Office disclaimed all responsibility for their issue, and they were withdrawn.

Our intelligence, both naval and military, was far better than that of the Germans or that of any of our Allies. At the same time I think that our censorship, so far as information intended for the public was concerned, and apart from that of private correspondence, was often short-sighted and narrow. In the active and constructive side, namely, that of propaganda, we were slow to appreciate and use the psychological weapon. In regard to the recording of news for the public in a future war arrangements should be made similar to those in existence before August, 1914, to include photography, films, sound films, and in fact all known methods. This would

ensure a close, sympathetic and understanding co-operation of all concerned, such as would enable the nation to be told as much of the situation and of the progress of events as it might be possible to reveal. To this it has a right.

* * * * *

The second and far more weighty fact which marked the 1st June was the playing of my last card, which proved to be a trump. On that day I handed to the Sub-Chief of the Staff,¹ for submission to the Commander-in-Chief, my completed memorandum formulating the conditions upon which the Tank was eventually developed. Thus was planted the fifth seed, which was to germinate, with results familiar to the whole world.

The memorandum ran as follows :

THE NECESSITY FOR MACHINE GUN DESTROYERS

The Germans, possibly in order to release troops for offensive action on a grand scale elsewhere, have for some time been maintaining and are still maintaining their front in France and Belgium with a minimum of men. They have been able to do this because they have fully realized and exploited the principle that on the defensive numbers of men can be replaced to a very great extent by skilfully and scientifically arranged defences and armament, and by machinery. They possess the knowledge, energy and skill to organize such defences thoroughly, and have by now had the time to do it.

By this time their positions consist of a strong front firing line, of trench or breastworks, backed by a zone which includes, besides communications, a network of subsidiary supporting trenches and points, such as works, houses, which are held by few men and yet provide a great volume of fire in different directions. Some of these works give fire

¹ Now Major-General Sir Edward M. Perceval, K.C.B., D.S.O.

to the front, others run fore and aft and give lateral fire to the right and left against an enemy who may have broken through the front line and seeks to penetrate farther. Most are so arranged that if lost they can be enfiladed or bombed.

In this maze behind the front the defenders, unless absolutely paralysed and shattered by artillery fire, have all the advantages. For there the attackers, if they should succeed in penetrating, find themselves fighting without much artillery support, on strange ground, at close quarters with the defenders who know every inch of the position and have marked every exposed spot, upon which they train their machine guns and rifles and shower bombs.

The chief feature of novelty in the German tactics does not lie either in the preparation of a strip of ground for fighting the attackers at a disadvantage, nor in the use of machine guns, hand-bombs or grenades. It lies in the number of the machine guns employed. And not only is this the chief feature of novelty; it is the factor which has done most to make possible the economy of men practised by the Germans; it is also the chief factor which has rendered abortive our attempts to penetrate their positions.

So far, we have in all our offensive efforts been unable, with our guns, to shatter the German defensive zone to its full depth over any considerable length and so blast a path for our advance. The machine guns have not been neutralized, and it is our infantry, either caught up in wire, in the open, or collected in the enemy's trenches, that have had to suffer from the undivided attention of these weapons shooting from protected and concealed positions. We have, so far, been unable to oppose anything to them but the bodies of our assaulting infantry.

Machine guns have caused most of our casualties in the attack and have stopped our offensive efforts. *And machine guns will do the same in future, unless :*

We have sufficient artillery and high-explosive

ammunition to blast a way through the German positions (trenches, wire, trench mortars, bombs, gas-cylinders, land mines, vitriol throwers¹ and machine guns inclusive) preparatory to our assault, or :

We can have recourse to some other means of destroying these weapons or at least of meeting them on equal terms and diverting or neutralizing their action so that it is not directed upon our infantry.

The first alternative is not at present within our power, though it may be so in the future.

The second is believed to be possible through the employment of "Armoured Machine gun Destroyers" which will enable us to engage machine guns on an equality.

ARMoured MACHINE GUN DESTROYERS (GENERAL DESCRIPTION)

These machines would be petrol tractors on the caterpillar principle, of a type which can travel up to 4 miles an hour on the flat, can cross a ditch up to 4 feet in width without climbing, can climb in and out of a broader cavity and can scramble over a breastwork. It is possible to build such tractors. They should be armoured with hardened steel plate proof against the German *steel-cored, armour-piercing and reversed bullets*, and armed with—say—two Maxims and a Maxim 2-pounder gun.

Construction. It is suggested that they should be employed as a surprise in an assault on the German position to be carried out on a large scale. To enable the element of surprise to come in these machines should be built at home secretly² and their existence should not be disclosed until all are ready. There should be no preliminary efforts made with a few machines, the result of which would give the scheme away.

Preparation for Employment. The machines should be brought up to railheads by train or road, and then

¹ At that time I was under the impression that the enemy were in possession of such engines in addition to their *Flammenwerfer*.

² This cannot be done if the country is full of aliens.

distributed at night along the front of action. They should be placed in deep pits, with ramps leading from the rear and out to the front over our parapet, dug as required behind our front line.

Suggested Employment in Attack. Say fifty destroyers are available. If they are spaced, say, 100 yards apart on the average it will enable a front of 5,000 yards, or about 3 miles, to be covered. The machines being in position ready, the wire entanglements in front of the hostile trenches will be bombarded and cut early in the night before the assault is intended to take place. After this, during the night nothing will be attempted except occasional outbursts of rifle fire to prevent the Germans repairing their entanglements. At dawn of the morning fixed for the assault, at a given signal, the destroyers will start. Climbing out of their pits and over the parapet, they will travel across the intervening space straight for the German lines. If this is 200 yards away they will cover the distance in $2\frac{1}{2}$ minutes, travelling at the rate of 3 miles per hour. They can tear their way through any entanglement.

Wherever it has been possible beforehand to locate and mark down machine-gun emplacements in the German front line the destroyers will be steered straight at them, will climb over them and will crush them. At other points they climb the enemy's parapet or trench and halting there will fire at any machine guns located, with the 2-pounder gun and will enfilade portions of the trenches with their Maxims.

It is thought that the destroyers, even if they have not by this time actually accounted for the bulk of the defending infantry, will have succeeded in attracting to themselves the attention of the enemy and *most of his fire*, so that our infantry, who will leave their own trenches and assault just as the destroyers reach the hostile parapet, will be able to cross the fire-swept zone between the lines practically unscathed.

After the destroyers have started out into the open and all surprise is over, our guns will at once start shelling the *enemy's artillery* in order to keep down its fire. There will be no need for them to bombard the German trenches.

While our infantry are racing for the enemy's front line the caterpillars will move on through the German defensive zone shooting right and left as they go. Those on the flanks of the section selected for the first assault will turn right and left and proceed along and behind the German defence zone, to enable our infantry on either side of the selected section to advance also. The action of their 2-pounder guns will be reserved for the German machine guns which cannot be rolled over, especially those in houses. Once through the zone of trenches the destroyers will proceed forwards, backed up by and supporting the first wave of the assaulting infantry, which will be moving forward with them, and followed by the mass of troops forming the main body of the attack.¹

Employment in Defence. In defence the destroyers stationed behind the line will move up if the Germans break through at any spot and will act as mobile strong points which can be driven forward right amongst hostile infantry who have penetrated. When no general offensive or defensive action is going on, their 2-pounder guns can be used as mobile anti-aircraft artillery.

The attack, carried out as suggested, will probably result in the loss of a certain number of destroyers, but not many, because the machines will be amongst the defending infantry before the German guns can be warned of their advance.

Many details of design, such as contrivances to enable the destroyers to signal back to our own infantry, to attract the enemy's attention, to repel boarders, etc., can be suggested.

Gas Operations. The destroyers will be of great value in gassed areas, since the crews will have their

¹ They may possibly get forward to within rifle-range of the German guns.

mouths at least 10 feet above the ground and, not having to march, will be able to wear the most efficient masks, even if of heavy design.

Attack. In a gas attack the destroyers could possibly move forward just in rear of the first gas cloud, where they would be hidden, in front of the first line of our infantry.

But the employment of gas in conjunction with destroyers would prevent any surprise.

Defence. The employment of destroyers is obvious.

Engines. In case the gas should interfere with the engines a small reservoir of oxygen could be carried, as has been tried for aeroplanes.

This was a fairly correct appreciation of the situation in France in May, 1915, and a preliminary general description of a probable cure. So far as I was concerned, it might have been produced at any time in the previous few months, being no more than a written statement of what I had been advocating. It was based on the possibility of adapting a particular existing machine of which I happened to know; though any other type of caterpillar tractor which could have been converted would have met my views equally well.

The memorandum was passed to the Engineer-in-Chief for his comments. As may be guessed from what had already happened these were not encouraging. Exception was taken to my statement that it was possible to build such machines as were foreshadowed by me. Other objections were made and more information was demanded. But the general attitude of the authority whose views should have carried much weight, was summed up in the words: "I therefore think that before considering this proposal we should descend from the realms of imagination to solid facts. . . ."

By now the chance had been given to three senior

officers to do something outstanding for the nation and incidentally to achieve additional fame for themselves, however great their reputation or exalted their position. Lord Kitchener had refused to listen. The Director of Fortifications and Works had been sympathetic, but ineffectual, for so far there had been no result.¹ Finally the chief adviser in military engineering of the Commander-in-Chief had airily dismissed the whole idea with a few sarcastic words sufficient to strangle at birth any invention that was ever conceived. The nature of the criticism, however, was not unexpected, and I was not unduly depressed. My eight months' experience had "larn'd" me something. On the 5th June I returned to the charge:

"SUB-CHIEF.

The portion of the Engineer-in-Chief's minute marked refers to:

1. The POSSIBILITY of building a machine such as suggested, and then to the questions of:

2. SPEED.

3. STEERING.

4. WEIGHT.

1. POSSIBILITY OF CONSTRUCTION.

It was not strictly accurate to state that it is possible to build a machine exactly of the type suggested, for the matter has not yet been definitely ascertained by trial. It would be more correct to say that since tractors are now in existence which so nearly comply with the required conditions, it is believed to be possible to construct a locomotive that will do all that is necessary sufficiently well to effect the purpose. On the other hand the *impossibility* of producing a destroyer of the type requisite will not be established until trials have been made and have all failed. Strictly speaking, also, the proposed machine is not a tractor, for it will not be designed to draw anything. It will be

¹ What had happened I discovered later. See Chapter X.

a self-propelling, climbing, block-house or rifle bullet-proof cupola.

2. SPEED.

There is a machine now on the market (the Holt Caterpillar Tractor, of which 75 are on order by the War Office), which has two speeds and can travel on the top speed at something approaching 4 miles an hour. The exact maximum rate is not known here, and to be on the safe side 3 miles per hour was assumed in the calculation for the time required to cross 200 yards. But speed is a question of gearing, and there is no reason why a Caterpillar locomotive should not be designed and constructed to travel even faster than 4 miles per hour.

It is believed that the Caterpillar tried at Aldershot (Hornsby-Ackroyd type) some years ago moved at least at 4 miles per hour.

3. STEERING.

On dry ground machines of the Hornsby-Ackroyd type (which is an old one) having a long propelling base or wheel belts can turn practically on the ground on which they stand, through any angle. Such sensitiveness and flexibility of steering is far beyond what would be required of a destroyer. If it is found after experiment that all power of steering is lost in wet weather (which is unlikely) the fact will merely reduce the proportion of days on which the destroyer attack could be attempted. This would vitiate the principle no more than the principle of aviation is vitiated by the fact that there are some days on which aeroplanes cannot fly.

4. WEIGHT.

It is not possible to give the exact weight of a machine which is not yet designed. As a comparison it may be stated that the heaviest Holt Caterpillar Tractor weighs 14 tons, while the old Hornsby-Ackroyd machine weighed between 7 and 8 tons.

The destroyer would correspond in size to a large traction engine boxed in with steel, and might resemble in appearance a heavy motor-lorry with

caterpillar attachment carrying a large metal tank. The weight of the plate ($\frac{1}{2}$ " steel) to enclose a rectangular box 14" long, 8' high, 7' broad, including floor and roof, would be under 5 tons. If the engine, gear and wheels could be built to weigh not more than 10 tons, which seems probable if steel be used instead of the inferior metal used in the Holt Tractor—which is intended for agricultural purposes and has to be cheap—the total weight of the destroyer without machine guns, crew, ammunition, petrol and water would be 15 tons. Fully manned and loaded it would be under 16 tons.

This weight would be distributed over two driving belts and would bring far less strain on bridges than some of the weights already brought up from the bases to the front by road, notably the motor-tractor for the 15" howitzer—10 tons on a pair of wheels, or the 8" howitzer, 12 tons 14 cwt. on a pair of wheels. The 6" Gun Mk. VII, which, I believe, is to travel by road, though it has not yet come up, weighs as much as 16 tons on a pair of wheels.

However, if it is found on working out a design in detail that the weight of the whole machine is excessive for the existing bridges there is no reason why the weight should not be subdivided, and the steel plating carried separately by lorry or train and then bolted together somewhere behind the place where the destroyer is required. This principle of the subdivision of weights is adopted with the 15" and 12" howitzers. But it does not appear, so far as can be seen at this stage, that the weight will be excessive or will necessitate the strengthening of the bridges.

I have written at some length in order to make clear in greater detail what is proposed, and have confined my reply to the portion of the E.-in-C.'s minute marked. But I think that to all his queries answers can be given which will show that if the employment of destroyers of the type suggested, in the manner suggested, is considered to possess any military value, their construction is mechanically a

sufficiently practical proposition to warrant the most earnest consideration of the whole scheme now merely outlined.

G.H.Q.

5.6.15."

E. D. SWINTON, Lt.-Col.,
R.E.

This, I thought, met the objections sufficiently to prevent the whole thing from being turned down. My memorandum, presumably with the above reply to the Engineer-in-Chief, was referred to the Inventions Committee, a body which by a happy coincidence had just been formed at G.H.Q. for the investigation of the numerous suggestions being put forward from different quarters for new devices which, it was hoped, might help to win the War. I knew the president of this committee, and two of its members were friends with whom I had frequently discussed my scheme.

For the moment I could do nothing more than endeavour to glean such information as might add to my knowledge of the subject and help me in the struggle obviously ahead now. I therefore visited the Royal Naval Armoured Car Division at Dunkirk. Its commanding officer, who had heard that the whole of his force was to be disbanded, was keen to show what it could do. He gave the alarm without warning, and within five minutes twenty-four armoured cars, fifty-eight motor-cycles and six armoured lorries, equipped with 3-pr. guns, were under way ready for action. It was an impressive performance. But in spite of the efficiency of the unit, I felt that the period of its usefulness had passed—for a time at least, since its activities were strictly confined to the roads.

Next day occurred the inevitable coincidence! I met some caterpillar tractors hauling howitzers on their way up from the coast. Now, though I had for months dreamed and talked of these machines I had never actually seen one, and I signalled to the officer

in command to halt. After "compliments," I found that the battery was one of 8-inch howitzers, a new type of converted piece—on its way to the Front. Proud as was the artillery officer in command of his guns, no less proud was the R.A.S.C. officer of the transport which, he informed me, consisted of Holt Tractors—the very machines upon which I had for eight months been building castles in the air! A little diplomatic scepticism on my part brought about a demonstration of their capabilities, the enthusiastic youngster being only too ready to show off his pets. It was just time for the midday halt. One tractor was quickly unhooked and made to give an exhibition performance on and off the road, up and down a sloping bank about four feet high, and across a small ditch. I then disclosed the purpose of my questions and invited the transport officer to dine with me that evening. When I went further into the subject I found that he shared my enthusiasm as to the possibilities of the machines. Next day I took out some members of the Inventions Committee to witness a performance by the tractors—a case of suborning both judge and jury, and highly irregular. They were much impressed.

On the following day Glyn, who was one of those officers who during the War led a permanently peripatetic existence and were always blowing into, and out of, somewhere, suddenly turned up again. He had made inquiries, and had discovered that my idea had been followed up at the War Office in a half-hearted way and definitely turned down after some sort of a trial. This had been done by the technical side, without the knowledge of the General Staff. He had also confirmed what he had heard rumoured vaguely before, namely, that the Admiralty had taken up the idea and that Mr. Churchill had formed a technical committee to investigate and experiment in the subject of "Landships" and had been pressing

on the scheme for all he was worth with Admiralty money !

I gathered that the naval people had done a lot of work, but did not know what the Army really wanted, had not inquired, and had been barking up various wrong trees ! One avenue they had been exploring seemed to me as fantastic as my own scheme appeared to other people. It was for a machine with a sort of Crystal Palace body carried on "Great Wheels" of the Earl's Court Exhibition type. Glyn had reported all this to the Director of Military Operations, who had been much exercised by the fact that the thing had been considered and rejected without reference to the General Staff, and had immediately pressed for the War Office to get into touch with the Admiralty with a view to joint action. To me it all still sounded like a fairy-tale. I was bewildered by the unnatural and devious course things had taken. And though I could not fathom how or why the First Lord of the Admiralty was mixed up in all this, my reaction was one of admiration for his prescience and initiative, and of gratitude that somewhere, and somehow, someone was actually doing something !

It was a grilling day, and as I walked with Glyn up and down the smelly *pavé* street—for the drainage-system of St. Omer was not above reproach—hearing all this wonderful news, I tried to think out my proper course of action. The quickest way of forcing matters would be to get into touch with Mr. Churchill direct. But against this was the fact that he had recently left the Admiralty and the other fact that I had just put the whole thing up officially. If the Commander-in-Chief fathered the scheme, it would, so far as the Army was concerned, be born in wedlock and would not be the natural child of an outsider. I decided to let things take their course.

* * * * *

General Callwell, who was then Director of Military Operations, animadverts on the fact that the Tank project was turned down by the technical branch at the War Office. He explains that the reason for this blunder was that the technical branches "had not been put in their place" before the War, did not understand their position, and did not realize that on broad questions of policy they were subject to the General Staff. He points out correctly that I never seemed to have got much satisfaction with G.H.Q. in France until I brought my ideas direct before the General Staff out there by submitting a memorandum to the Commander-in-Chief.¹

It is natural that the Director of Military Operations as a distinguished and highly placed member of the General Staff, should have championed that body. And in hoping, as he did, for the subordination to it—on broad questions of policy—of all other branches he was theoretically correct. But, in the existing state of things the best course in theory was not so in practice. In talking of the technical branches being "put in their place" he unconsciously reflected the current attitude of too many members of the General Staff—one of superiority, where often no superiority really existed, of ability, knowledge, experience, or judgment. Before the ideal situation could be reached—with advantage to the conduct of affairs—the nature of the General Staff, as it was then, would have had to be changed. It was essential that before decisions were given on matters of policy, all the facts, some of them technical, upon which policy must be founded, should be taken into consideration. General Callwell allows that practical men were necessary to set the General Staff in motion. But the difficulty was that not infrequently the practical man failed to get a hearing. To remedy this state of affairs, proper weight must be attached to

¹ *The Experiences of a Dug-out, 1914-1918*, p. 119.

the technical side, which implies the admission into council of those who understand that side. There has been a tendency to attach too much importance to "staff" work *qua* staff work, and to disparage so-called experts. This has not been for the reason that—"There are liars, damned liars, and experts," but because of the supposed narrowness of the experts' point of view as compared with the wider outlook of the Staff. The inclination was to regard the technical man as necessarily a crank.

In the case under consideration, as will be seen later, the idea was in fact rejected by the technical advisers—at Home; and Callwell was quite right in saying that the impetus to the Tank was given by the General Staff at G.H.Q. But this happened in June, 1915, at the moment when there had been formed a semi-technical advisory body—the Inventions Committee—to which new ideas were referred and whose opinions claimed attention.¹ The advantage of this procedure was that these opinions, if accepted, had the *cachet* of the General Staff.

* * * * *

In regard to the statement that the naval people did not know what the Army really wanted and had not inquired, I was to discover later, on my return to London, that Mr. Churchill had in fact done something, though in rather a roundabout way, to ascertain the military requirements for landships. It is recorded in Sir Albert Stern's *Tanks, 1914-1918*, that the First Lord, ever since he had taken a hand in the game, had for some unknown reason opposed joining forces with the War Office in his investigations. But though he had carried this reluctance so far as to avoid seeking information directly from any military

¹ A standing joke at one time was that this Committee was so careful that it circulated a memorandum giving six different views of a sandbag.

source, he had in April sent three of his own scouts to France to reconnoitre and ascertain the conditions behind the Front.

Here we enter upon comedy pure and simple—almost Chinese in its grotesqueness. Of these three officers, one was a distinguished electrical engineer and a retired officer of the Regular Army. The second and third were respectively a banker and a major of cavalry, both attached to the Armoured Car Division of the Royal Naval Air Service, and both correctly attired in the uniform of that Service.¹

Now the presence and independent activities in the land theatre of war of the naval organization, which was called the "Dunkirk Circus," had never been regarded with favour by the Army. The ways of sailors and soldiers are different. Some would say that the difference is that which exists between breeziness and stuffiness; but, "be that as it may"—which is an expression I learned in a court of law—so far back as November, 1914, the time for wheeled armoured cars had passed, and efforts had been made by G.H.Q. to be freed from the well-meant intervention of the Senior Service.

And so it came about that when in the Spring of 1915, three officers, two in naval uniform, were discovered nosing about behind the British front on some vague mission, their presence was not welcomed, and they were ordered out of the zone of operations. It needed only their arrest as spies—which was in fact threatened—to have completed the farce.

So far comedy. But behind it was tragedy in which we see again the malicious fate which dogged the inception of the Tanks. At that time, within easy reach of G.H.Q. France, were three patriotic men thirsting for certain vital information in order to help

¹ Colonel R. E. Crompton, C.B., late R.N., Rifle Brigade, R.E. (ret'd.), who wore the Crimean medal; Lieutenant A. G. Stern, R.N.A.S.; Major T. G. Hetherington.

their country. They were unconscious of my existence. And there, so close, and equally ignorant of their presence, was I, who could have furnished them with all the information they were seeking. Had we met, the specification which eventually reached those engaged in designing a landship and upon which they designed the Tank would have been at their disposal nearly three months earlier than was actually the case.

* * * * *

Meanwhile, at G.H.Q., the Inventions Committee had the project under consideration, and I further elaborated the subject before them verbally. Having made progress in this direction, I was anxious to ascertain from one of our fighting generals whether in his opinion a machine such as that contemplated would be of any use in the attack. I felt that the views of Lord Cavan,¹ who was then commanding the 4th Guards Brigade, would be of great value, for he and his brigade had fought with consistent success on nearly every sector of the Western Front. I therefore visited his headquarters at a little mining village between Béthune and La Bassée. The General was away, and I saw an officer on his staff. Owing to the uproar created by a battery of our howitzers close by, I found some difficulty in making myself heard, but I managed to explain the object of my visit.

Next day I received the following note from the General :

“ Headquarters,
4th Guards Brigade,
June 12th.

DEAR SWINTON,—

I was very sorry indeed to miss you to-day. I was out reconnoitring—Brabazon, my Staff Captain,

¹ Now General the Rt. Hon. the Earl of Cavan, K.P., G.C.B., G.C.M.G., G.C.V.O., G.B.E.

explained as well as he could your 'Juggernaut system.

Personally, I welcome any suggestion in this extraordinary war that will help to take an enemy's trench without a cost of fifty per cent of the *leading* company and seventy-five per cent of that company's officers, for this is what the present-day assault amounts to, even with every precaution.

Now as to the suggestion itself: I think it would work *once*, perhaps *twice*, in the summer, but *never* in the winter, between Givenchy and St. Eloi, for I don't believe that any heavy engine would be supported by the ground in that cursed bog-land.

I think an ideal terrain for a start would be the area about Vermelles and two and a half miles south thereof. Here there are no ditches, no trees, practically no houses, and only trenches, which I understand 'Juggernaut' claims to overstep. Ordinary dimensions of German trenches are roughly five feet to six feet across the top, often less, seldom more, but *very* deep. To my mind the complete destruction of *wire* is the key to success in an attack from trench to trench. I am positive that if any brigade is in trenches at any distance from the enemy, it will take the enemy's trench, given two things:

(1) Time to sap or dig near enough to make the assault less than 150 *yards*.

(2) All wire removed.

The great and serious trouble is that one cannot tell, especially now in high crops, *whether the enemy's wire is cut or not*.

Here comes in your 'Juggernaut.' We know that if five Juggernauts have passed through that the wire is no more. This is a *certain* saving of hundreds of lives, and a fat legacy to moral. I think it should be possible to pass platoons up actually hanging on to the back of the Juggernaut itself, without waiting for its enfilade fire up and down the hostile trenches, as this is easily overcome by good traverses.

What one wants is:

(1) The path cleared to the enemy's first trench.

(2) Fire kept down from the second trench and machine guns in strong points behind.

I hope very much indeed your idea may have a good trial, and as I know nearly all the British line, bar the right of the Second Army, I can fairly say I know no better place than that I name, viz. about Vermelles.

Yours,
CAVAN."

"Reports come in to me nightly now of wire in the corn, 30, 40 and 50 yards in front of enemy trenches. *They* see the wonderful defensive property of wire and how difficult it will be all the summer for our artillery to cut it—another argument for your engine."

This reply was most encouraging and showed the writer to be appreciative of possibilities as well as willing to investigate suggestions.

The next thing was to ascertain, if possible, the approximate dimensions of any light quick-firing gun likely to be suitable for the machine gun destroyers. For this purpose I visited the newly formed Machine Gun School of Wisque near St. Omer, and went to Boulogne to inspect the Q.F. guns on the Mole. In neither case did I find anything fitted for my purpose.

On the 15th June, after further thought, I submitted the following additional details as a specification of what the proposed destroyer should be able to do :

"CATERPILLAR MACHINE GUN DESTROYER

SUGGESTED CONDITIONS TO BE ADHERED TO IN DESIGN, IF POSSIBLE

(These are tentative and subject to modification.)

SPEED.

Top speed on flat not less than 4 miles per hour.

Bottom speed for climbing miles per hour.

STEERING.

To be capable of being turned through 90° on top

speed on the flat on a radius of twice the length of the machine.

REVERSING.

To travel backwards or forwards (equally fast?).

CLIMBING.

To be capable of crossing backwards or forwards an earth parapet 5' thick and 5' high, having an exterior slope of 1/1 and interior slope vertical.

BRIDGING.

All gaps up to 5' in width to be bridged directly without dipping into them.

All gaps above 5' in width to be climbed (up to a depth of 5' with vertical earth sides).

RADIUS OF ACTION.

To carry petrol and water for 20 miles.

CAPACITY.

Crew and Armament.

To carry 10 men.

2 machine guns.

1 light Q.F. gun.

WEIGHT.

Total weight of destroyer loaded with armour, water, petrol, ammunition, armament and crew to be such and so distributed on tracks as not to bring a greater strain on bridges than that produced by 14 tons on an ordinary axle with a pair of wheels. The weight of armour, ammunition, armament and crew may be taken at 8 tons.

This figure is an approximation and depends largely on the superficial area of the armour carried, which is governed by the size of the enclosed space to contain the armament and crew under working conditions. The latter can be settled only by experiment with actual men and guns.

It seems that a locomotive resting on long caterpillar tracks only (like the Hornsby-Ackroyd type) would fulfil the conditions best; or, if another support in front must be given, it might take the shape of a fore carriage carried by a "skate," the skate to be an endless chain track running idle over rollers."

This statement of performance was based on the most difficult type of German trench of which I then had knowledge. As will be seen later, its vital point was that the machine should be capable of climbing a vertical height of five feet.

The 22nd June was another important day, for on it my memorandum, with the specification of the 15th, having successfully passed the Experiments Committee, was submitted by Sir John French to the War Office. He inquired whether such machines were available and could be adapted; if not available, whether they could be made; and what the weight and dimensions would be. He requested that the proposal should be placed before some experienced manufacturer for report on these points, as without such a report it was not possible to specify the exact conditions which the machine should fulfil. And he offered to send me over to England to elaborate my suggestions personally. His forwarding letter ran as follows :

“ O.A.2/108.D.

From :

The Field-Marshal Commanding-in-Chief,
British Army in the Field.

To :

The Secretary,
War Office, London, S.W.

General Headquarters,
22nd June, 1915.

SIR,—

I have the honour to forward herewith the suggestions put forward by Lieut.-Colonel E. D. Swinton, D.S.O., R.E., marked ‘A,’ and certain further remarks made by him in papers marked ‘B’ and ‘C.’

There appears to be considerable tactical value in this proposal, which adapts the peculiar qualifications of the caterpillar mode of traction to the transport of a species of armoured turret across cultivated and uneven ground, especially in con-

nexion with the trench warfare which is the feature of the present operations ; and particularly if the production of these machines be a surprise to the enemy.

As will be seen from the papers, the governing factors are :

(1) Whether such machines are available and can be adapted.

(2) If not available, can they be made ?

(3) What would be the weight and over-all dimensions ?

It is felt that these points can only be decided by reference to manufacturers of such machines. It is therefore requested that this proposal may be placed in secret before some experienced firm for report on these points.

It is impossible, without the opinion asked for above, to specify the exact conditions which these machines should fulfil. Some attempt, however, has been made to record the maximum requirements in paper 'C.'

Should it be considered advisable, Lieut.-Colonel Swinton could be sent over to England to give personal explanations, in order that a closer investigation of the matter can take place.

It is understood that some experiments in these machines have already been conducted by the Admiralty, with whom it might be advisable to consult.

I have the honour to be,

Sir,

Your obedient Servant,

(Signed) J. D. P. FRENCH.

Field-Marshal

Commanding-in-Chief,

British Army in the Field."

After studying this letter, I came to the conclusion that it rather put the cart before the horse, for until we in France could specify definitely the nature of the task which the proposed machine must be able

to perform, it was hopeless to expect the manufacturers to express any views. I again wrote to make clear that my description of the obstacles to be overcome was a matter of personal opinion based on a limited experience ; and that to save time and correspondence, the most complete information possible should be collected from the whole front. This would enable G.H.Q. to state categorically what the machines should do. As an illustration I mentioned that the width of the gap to be crossed, which two weeks earlier I had estimated at five feet, should, according to the latest intelligence, be increased to eight feet. I also expressed my fear that the Germans might forestall us in the introduction of some similar engine of war.

"CATERPILLAR MACHINE GUN DESTROYERS

SUB-CHIEF.

Reference letter O.A.2/108. D. of 22nd June from Field-Marshal Sir John French to Secretary, War Office, I note that the C.-in-C. considers that there may be some tactical value in the employment of 'Caterpillars,' and that it is proposed that I should be sent home to explain my views in the matter.

I think that though as stated in the letter it is generally impossible to specify exact conditions until a reply to the C.-in-C.'s letter is received from the War Office on heads (1), (2), and (3), that matters will be very much expedited if the definite authoritative opinion of the G.S. upon one particular point can be prepared now. This point is the *nature of the obstacle which the machine must be capable of negotiating*. An opinion on this can only be framed here and the collection and collation of the information necessary to form it can be carried out at the present moment.

The War Office will be unable to reply even to (1) of the letter under reference until *they do get this information*, for *they* will not be in a position either to test existing machines or to put a concrete propo-

sition to the manufacturers whom they are requested to consult for future machines.

If I am sent home to assist, as suggested, I can at present give the War Office no more information on this subject than that already written by me, which is a personal opinion of a tentative nature based on inquiry and a limited personal experience, and not founded on an analysis of the most complete information available from the whole of our front, which I have no authority to call for and no means of getting. As an illustration of what is meant I may say that upon further inquiry I think that the size of the gap to be crossed specified by me should be increased from 5 feet to 8 feet, but that is based on what one officer has told me.

An authoritative statement as to the nature of the obstacle which the Caterpillars will have to cross will almost certainly be one of the first things asked for by the War Office. As matters stand, to give it will necessitate a reference to G.H.Q., the collection and examination at G.H.Q. of the data available and the framing of a reply. This will entail a delay which I think might be prevented if an investigation were made and a decision on this point were arrived at beforehand so that the answer to the inevitable question would be ready before it is made.

(Signed) E. D. SWINTON,
Lieut.-Colonel.

29-6-15."

After this, apart from discussing the destroyer scheme with different officers, among them Hankey, who was at G.H.Q. with Mr. Asquith and Lord Kitchener in the first week of July, I was unable to take any further steps in the matter while I remained in France.

* * * * *

Meanwhile, Percy received the offer of a post at the War Office. As the firm of Eyewitness (now much

limited) seemed likely to be liquidated in the very near future, I put no obstacle in the way of his departure; and with great regret said good-bye to an able and efficient subordinate, with whom I had worked for nine months in a very amicable relationship. Our association is one of my most pleasant memories of that period.

Among other people whom I met early in June were Sir Max Aitken,¹ and Sir Harold Harmsworth,² who were out on a visit to the Army. Both were most friendly, which was more than I expected, in view of the nature of some of the comments upon my work printed in the organs with which they were connected. Sir Max Aitken, amid all his other activities, was filling somewhat the same position for the Canadian Forces as I was for the whole Army. I found him much perturbed because the articles being written by his friend "F.E." were not being published in the British as well as the Indian newspapers. Shortly after this Major F. E. Smith called on me to complain of the fact that what he wrote was censored. The matter was not one within my jurisdiction. But, as I—a professional soldier of twenty-six years' service—had to submit to the censorship of three officers, while he was merely censored by one, I am afraid I did not exhibit the sympathy he expected.

Sir Harold Harmsworth I found to be concerned as to the nature of the defences that had been prepared in case the Germans should again attack. I was both interested and surprised that he should have held any views on this subject. But, by a coincidence, he had hit upon an aspect of our measures which had exercised me more than a little since the Battles of Ypres in the previous October and November.

As a matter of fact, in December, 1914, in view

¹ Now the Right Hon. Lord Beaverbrook, P.C.

² Now the Right Hon. the Viscount Rothermere, P.C.

of the possibility of a renewed onrush by the enemy, I had made a suggestion that we should prepare a zone of defence upon which to receive such an attack on a carefully selected position behind our then front line—which had not been chosen by us. I had for long been of the opinion that the holding of a continuous line, as was our practice, was the negation of the idea of providing the maximum of bullets, with the exposure of the minimum of bodies.¹ My plan was to organize an irregular defensive belt of machine-gun posts firing along wire entanglements, which could be quickly manned and armed when an attack threatened. Protection against the enemy's bombardment would be given by concealment and evasion rather than by resistance. In each post was to be a small shaft sunk twenty feet deep, consisting of sections of flanged iron tube five feet in diameter, of the type used for tube railways. I need not go into further detail, but in principle the system was an anticipation of that adopted by the Germans when they later developed pill-boxes.

* * * * *

By the first week in July it was clear that my term of usefulness as a correspondent had come to an end. I had with great trouble prepared a series of letters descriptive of the various activities and work at the bases, which were full of information not generally known even in the Army, still less to people at home, and which would have given the public some idea of how the business side of the Army was conducted. They were not printed by most of the papers, and in those in which they did appear they were greatly cut down. It was natural, no doubt, that the newspaper proprietors and editors should prefer to make use of what

¹ In 1908 I had delivered a lecture at the Royal Artillery Institution, Woolwich, on what I called the "Blob" system of defending a position as opposed to the method of the continuous line.

their own men sent home. Strangely enough, at the end of June, when it came to the point, and the Press Association was notified by the War Office of my approaching journalistic demise, that organization, in spite of the fact that the correspondents in France had urged the contrary, expressed the view that my activities should continue.

I was on very friendly terms with the Pressmen sent out to G.H.Q., and some of them honoured me by dining with me. On one occasion Mr. Frederick Palmer, the distinguished American journalist, who afterwards became Major Palmer when the American troops arrived in France, was my guest. He did not turn up at the appointed time. After waiting a quarter of an hour, I was hungry, but not anxious. After half an hour I was both, and had just decided to start my meal when the orderly announced that a British and a French soldier, with a prisoner, wanted to speak to me. On hurrying out, I found my guest, looking all hot and bothered, escorted by two men with fixed bayonets. The British private reported that the prisoner had tried to get into G.H.Q. without a pass, and had explained that he had left it at some "Shattoo" outside the town and was dining with Colonel Swinton at the Intelligence Mess and what was he to do about it? The *poilu* must have understood what was happening, even if he did not know English, for he looked acquiescence. I stared coldly at Mr. Palmer, then at each of his guards, then again with a blank look at the prisoner. For a moment I was impishly tempted to say "I have never seen this man before. Take him to the guard!" but the thought that he might make God's Country ring with curses of me and bring about an international incident, and last, but not least, the hungry look in his eye, caused me to desist. I admitted that I knew the miscreant and would be responsible for him. With a sigh of relief which showed he had read my

mind, the prisoner took a pace forward, and the two soldiers saluted and marched off. This was my first tactful gesture to our American Cousins—the first extension of the “glad hand” which I was literally to hold out so often three years later.

I now had an interesting visit from General Rimington—“Mike” Rimington, of the Carabineers and of Rimington’s Guides of the Boer War.¹ He was a man of imagination, and before the Germans used gas on the 22nd April had suggested that we should employ something of a similar nature, which he described as “Chinese stinkpots.” His idea, of course, had not been entertained for a moment, owing to the restrictions of the Hague Convention, to which we rightly paid a respect not accorded by our principal enemy. He was before his day. I found in him a fellow-enthusiast about the possibility of the machine gun destroyers.

The “bald” note in my diary for this day runs as follows: “Port for mess to celebrate the hundredth article.” I remember that as we discussed the Field Force Canteen “Blackstrap” that night I was reminded of old days with the Railway Pioneer Regiment in the South African War. Whenever one of the large railway bridges which we were rebuilding was finished and the first engine puffed across safely, with the Union Jack at its prow, we celebrated. We had no port; but we had tinned asparagus!

On the 6th and 7th July Mr. Asquith and Lord Kitchener were at G.H.Q., and I accompanied the visitors on their tour of our front. As we stood round the huge crater of a 17-inch shell near the Cloth Hall in Ypres I thought what a “bag” it would be for the enemy if by chance a second shot should fall near the same spot. The next day I was not allowed to accompany Lord Kitchener southwards into the French area; but I received a cryptic message

¹ The late Lieutenant-General M. F. Rimington, C.V.O., C.B

from him that anything I wrote of his tour was not to be too "Eyewitnessy." Whether this meant that my account was to be more picturesque and graphic than my usual productions, or less so, was not clear.

We were now very active in our anti-gas precautions, which included the forecasting of the weather; and a story was current supposed to be indicative of the mentality of that type of officer who apes the Almighty, of which there were not many—but more than enough. It was said that a meteorological map covered with barometric isobars was shown to a person of this kind. When the position and probable course of an anti-cyclone was pointed out, and it was explained that it might prevent our making use of gas, his reply was: "Well, have the damned thing moved a hundred miles south."

The actual end of my activities as official correspondent came suddenly on the 18th July. I had been out practically the whole day, and among other things had seen the newly arrived 17th Division of the New Army troops on the march up to the Front. When I got back to my office about seven o'clock I learned that the Chief of the General Staff had sent for me three times. Upon my reporting to him he told me that I had been cabled for to go home, as the Prime Minister wanted my services, and he asked if I knew the reason. I answered that unless it were to explain in detail my scheme for a machine gun destroyer—as Sir John French had suggested in his letter—I had no idea. I was ordered to report to Mr. Asquith as early as possible. Within two hours I had completed my 103rd and last article and packed up.

By half-past eight next morning I found myself on the road to Boulogne. I had some regrets, but on the whole was not sorry to sever my connection with the Fourth Estate—interesting as it had been. Flung into the job at short notice—to fill a gap—I had played

at being a journalist for exactly nine months and nine days and had been withdrawn at even shorter notice. But I had served a sufficiently long apprenticeship in the profession to learn something of its difficulties and to appreciate the skill of the craftsmen who had mastered them.

Once again, as on a previous journey to the coast, eight months before, I speculated on what lay ahead of me. On that occasion I was aflame with an idea! Was that idea now about to assume tangible shape?

CHAPTER IX THE HOME FRONT—"OPEN SESAME"

Whitehall Gardens

[July-December, 1915]

I DID not long remain in suspense as to my fate. The day of my arrival I learned from Hankey that, on his recommendation, I had been sent for to act in his place as Secretary of what was then called the Dardanelles Committee of the Cabinet, whilst he himself paid a visit to that theatre of operations. A further reason which he had urged for my recall was that I might have the opportunity of pressing the machine gun destroyer from a central position, with some weight behind me. My spirits soared.

My new post was one of great responsibility and varied interest, and I had much to learn in the short time before Hankey's departure. He, of course, had everything at his fingers' ends, whilst I had to seize hold of numerous threads, of the past history of which I knew nothing, and carry on to the best of my ability. All that afternoon and next day were spent in going into my job. I already knew Mr. Asquith and Mr. Balfour from pre-War days, and was introduced to various other Cabinet Ministers and officials, and the whole breed of secretaries—departmental, parliamentary, parliamentary private, private and personal—with whom I might have to deal. Amongst other privileges I was given a key to the private door of the Admiralty, and later on this saved much valuable time by enabling me to slip in and out to see the First Lord—then Mr. Balfour—

without delay. On the morning of the 21st July Hankey departed.

The complete change of *milieu* and atmosphere was at first bewildering, but agreeably so ; and after my recent experiences I greatly appreciated the fact that though most of the matters with which I had to deal were extremely secret, I was my own censor. More than that, I found that my official position was an "Open Sesame"—a key to every door. Of this I did not hesitate to take advantage ; and on the second day after my return I looked in at the War Office to ascertain what was happening with regard to my scheme. I found that what Glyn had told me was correct. The Admiralty had for some time been exploring the possibilities of "Landships," and a joint Admiralty and War Office Committee had just been formed to take up the subject. For further information I was advised to apply to Mr. d'Eyncourt, the Director of Naval Construction.¹

* * * * *

By now the old Committee of Imperial Defence had ceased to function as such. After the outbreak of war its place had been taken for a short time by what was known as the War Council, which had in its turn become the Dardanelles Committee of the Cabinet. It was of this body that I was acting Secretary ; and in this capacity I handled every subject connected with the War which was sufficiently important to come before it. My work was of the most absorbing nature ; but as the deliberations of this Committee were and still are secret it will be understood that but little of this side of my activities can be told. My narrative must therefore be confined chiefly to my experiences in other directions. I was free to devote such time as I could spare from my main secretarial

¹ Now Sir Eustace H. T. d'Eyncourt, K.C.B.

duties to the furtherance of any idea likely to be of value to the prosecution of the War.

The Dardanelles Committee met only when called together by the Prime Minister to consider special problems. No agenda paper was presented to the meeting and the deliberations of this body were not recorded, except that two copies of manuscript notes made by the Secretary were kept. One of these, after being initialled by the Prime Minister, was submitted to the King for his information. This was in accordance with Cabinet practice in peace time ; but it was not a businesslike procedure, for without the guidance of fixed agenda the deliberations tended to be discursive. It not seldom happened, therefore, that they tailed off without any definite resolutions having been tabled ; and it then fell to the Secretary to precipitate a decision from what may possibly have been a rather nebulous discussion.

At the first meeting at which I was present, on the 24th July, an important point was discussed upon which no decision was reached. As the necessity for a definite ruling particularly affected the Secretary of State for War, who would have to take action, I went to see him, to ascertain whether his impression of the sense of the meeting confirmed my own.

I had not talked with Lord Kitchener since I had received my parting instructions from him on leaving for G.H.Q. in the previous September. On this occasion he was equally friendly and went most fully into the matter I referred to him. To my surprise, when it had been settled, he spoke of my recent work in France, said that he realized that it must have been difficult, and thanked me for what I had done. He was so genial that it did occur to me for a moment to broach the subject so close to my heart. But in view of what I had just learned three days previously of the progress of the machine gun destroyer scheme, I decided to take no risks and to let well alone.

A few days later, on the 30th, I called on Mr. d'Eyncourt. He was puzzled by my visit; but the post I was holding was a passport to his confidence, as was my obvious desire to be of assistance. In the light of after-knowledge as to his past experiences, I do not wonder that he was perplexed by the sudden appearance on the scene of yet another cook to brew the landship broth. He gave me a brief outline of the position, and informed me that a fresh design for a landship was being prepared in accordance with a specification recently received from the War Office,¹ but that apart from design, the question of departmental responsibility was in the air. For further details he referred me to the Secretary of the Committee—Lieutenant Stern.²

I wrote at once to the latter. This was like lighting the fuse of a mine. Things began to move. Stern came round to see me next morning. He bounced into my room, bubbling over with enthusiasm, and proceeded to explain what his Committee was doing. He was dressed in naval uniform, but was obviously no sailor, and I could not at first fathom his position *dans cette galère*. To learn, after tactful inquiry, that he was a banker made things "curiuser and curiuser". We both burst out laughing—an auspicious beginning of an association which was to last for over a year.

A day or two later he turned up again with some drawings. I was too busy to examine them, and was content to leave matters of mechanical design in the hands of experts who were working on what I regarded as the right lines.

Stern, in describing our first meeting, writes:

"It was about at this time—July, 1915—when we were struggling with the mechanical problem and

¹ He was unaware that this specification had emanated from me.

² Lieutenant A. G. Stern, Armoured Car Division, Royal Naval Air Service, now Lieutenant-Colonel Sir Albert Stern, K.B.E., C.M.G.

fighting to be allowed to exist, that Colonel Swinton by chance discovered us.”¹

Though the discovery was not a chance one on my side, the surprise was mutual. It was the meeting of Stanley and Livingstone in the forest of the Dark Continent over again. I was the first soldier, whom these naval and near-naval people had encountered, to show any keen interest in the work on which they were engaged—actually for the benefit of the soldiers. I gratefully welcomed them as kind foster-parents and rescuers of my own baby. They, deeming themselves the aborigines, or rather the pioneers in almost unexplored territory, looked upon me as a tenderfoot—though a lusty and well-disposed one—who had suddenly strayed into it. They were, however, all most friendly, for I was not only out to help the Cause, I was in a strong strategic position to do so.

* * * * *

I now ascertained what had happened at home during the seven months which had elapsed since I had gone back to France “full of hope” after having deposited my third seed with General Scott-Moncrieff.²

To turn first to the War Office, which logically should have been the legitimate parent of the machine gun destroyer. General Scott-Moncrieff had not seen Tulloch on the 5th January, as arranged; but he had, on my representation as to the advisability of appointing a committee of experts, at once moved and referred the matter to a small departmental committee. Meanwhile, the arrival at the War Office of Mr. Churchill’s letter of the 5th to Mr. Asquith, containing a suggestion for the formation of a permanent committee of experts, and its favourable reception by Lord Kitchener, gave the scheme a second impulse

¹ *Tanks 1914-1918. The Log Book of a Pioneer*, p. 40.

² See Chapter VI.

forward.¹ A few days later, a memorandum from Tulloch (which he had been asked to write), elaborating views similar to mine and urging that the matter should be confided to a special technical committee, provided yet further impetus. Thus from three directions was the War Office conjured to place this scheme in the hands of a body of engineering and other technical experts. This, however, is what it failed to do.

Its interest and action in the matter culminated and collapsed on the 17th February with the unsuccessful trial across obstacles of a loaded Holt Tractor. It was officially recorded: "No modification of the engine would make it possible for these obstacles to be crossed." "Any use of the caterpillar for the attack of trenches seems to be out of the question." Of those concerned Colonel Jackson alone maintained that a machine could be contrived to do what was required. But his voice was that of one crying in the wilderness. The failure of an agricultural machine to perform an impossible task proved the death-knell of the War Office contribution to the solution of the problem of attacking machine guns and wire by machines. The whole project was now quietly and decently buried.²

But it was not long to remain interred. Towards the end of May a motive other than the inherent necessities of the situation came into play to resuscitate the supposed corpse. Glyn, who had been making inquiries at my request, reported to the War Office that across Whitehall a body called the Admiralty Landships Committee had for months been working at the production of a trench-crossing machine, and was still doing so. This startling news at once aroused departmental *amour-propre*; revived the interest of

¹ See Chapter VI.

² Later on, in June, a big-wheeled tractor carrying a bridging device—one outcome of the Admiralty investigations—was tried by the War Office and rejected.

the War Office in a subject which was thought to be defunct; and galvanized it into renewed action. Inquiries were set on foot. Correspondence took place as to the possibility of pooling forces between the two departments, the formation of a joint committee, its functions, membership; and there was some discussion as to what was required from a landship, etc. A month later yet more life was injected into the now quickened body of the project by the receipt of the definite demand from the Army in the Field, conveyed in the letter from Sir John French of the 22nd June. This was final. Such a communication could not be ignored.

And here we come to a link of vital importance in the chain of causation of the Tank. The War Office, thus aroused, once more took a hand in the game. On the 30th June, at a critical moment, when, for lack of knowledge of what was wanted, the Landships Committee was on the point of giving up its self-imposed task in despair, it communicated to that body the specification for a machine gun destroyer, which I had submitted on the 1st.

During July the joint War Office and Admiralty Committee was formed, and further discussion took place between the two departments as to the future responsibility for the landships. Then a third party came on the scene. A suggestion was made that the work should be taken over by the newly formed Ministry of Munitions, to which had been transferred all matters appertaining to the subject of trench warfare.

* * * * *

To turn now to the Admiralty—the foster-parent. Its activities up to the time of Mr. Churchill's letter to Mr. Asquith have been recounted. But the First Lord, wise in his generation, and dubious as to the zeal with which the military authorities would pro-

secute the matter, simultaneously with his written representation, initiated experiments within his own department. Various devices, such as coupled steam-rollers, bridge-carrying wheeled tractors, etc., were tried and discarded.

Then it was that he took the first of two steps to ensure full consideration for a project upon which he had set his heart. On the 20th February, 1915, he formed a semi-technical committee under the Director of Naval Construction expressly to deal with it. Five weeks later, when this committee had brought matters to the executive stage of experiment necessitating the expenditure of money, he took the second step—one for which he deserves the gratitude of the Army and of the nation. He sanctioned the expenditure of £70,000 of public funds upon what was a speculative venture, not—be it noted—for the Service for which he was responsible, but for the Army. Thus, at a time when the machine gun destroyer scheme had for six weeks been lying moribund at the War Office, abandoned as an impossibility, there was born on the other side of Whitehall a special organization, well supplied with the sinews of war for its support.

During April, May, and June this organisation strove by various experiments to evolve the kind of machine it imagined was required. In April, without ascertaining from the War Office what the Army needed, Mr. Churchill sent three officers out to France to investigate the local conditions, with the result already described.¹ In May he severed his connexion with the Admiralty, though retaining an active interest in the landship project.

On the 30th June a demonstration took place of the crossing of entanglements by a small caterpillar

¹ Colonel Crompton, who was for some time employed in the work of designing, tried in vain to obtain information as to requirements from the War Office. All that he could ascertain was that the caterpillar track principle was thought to be quite useless.

tractor. This was carried out before Mr. Churchill and Mr. Lloyd George, then head of the newly formed Ministry of Munitions, and enlisted the interest of the latter—which he never lost—in the subject. As a result he agreed to take over from the Admiralty the responsibility for the supply of landships after that department should have produced a satisfactory machine. And it was on this date, as we have seen, that the Landships Committee first received definite instructions as to the direction in which it should work. Up till then it had been groping about in the dark, concentrating its efforts chiefly on the production of a vehicle to carry a number of men rather than on an engine manned by a minimum fighting crew to destroy machine guns.

* * * * *

Matters, then, were at this stage when I returned from France, and was in a position to take an active part in pushing the project. So far as the technical creative side was concerned, everything seemed to be in train, and we could only await the completion of the design under preparation. On the administrative side, however, the situation was by no means clear.

* * * * *

Whilst within my own small sphere and in my spare time I was assiduously fostering the project in which I was so much interested, grave events were taking place. Amongst other developments which were causing serious anxiety, the Government was in the throes of deciding the critical question as to whether the Gallipoli operations should or should not be continued. Our attack at Suvla had failed and Sir Ian Hamilton had asked for large reinforcements. This was a matter for the consideration of the Dardanelles Committee. As Acting Secretary, a portion of the work entailed fell within my province. One episode

in connexion with it is well described by General Callwell¹ :—

“ One evening in August, about 7 p.m., just when I was getting to the end of my work for the day, Colonel Swinton, who for many months past had been acting as ‘ Eyewitness ’ with Sir J. French’s forces, turned up unexpectedly in my room. My pleasure at meeting an old friend, recently from the hub of things in France and whom I had not seen for a long time, gave place to resentment when he explained what he had come for. It appeared that he had a short time previously arrived in the United Kingdom to act temporarily as Secretary of the Committee of Imperial Defence (which practically meant the Dardanelles Committee at the moment), and he had been called upon, right off the reel, to prepare a memorandum on the Dardanelles situation which was to be ready next morning. Knowing comparatively little about the Dardanelles, he had come to consult me. In the first instance I absolutely declined to oblige. I had no authority from Lord K. or the C.I.G.S. to express views on this subject on paper for the benefit of the Committee. Furthermore—and perhaps this weighed more heavily in the scale than did official considerations—I was ‘ fed up.’ One generally was by 7 p.m. at the War Office. The very idea of starting at this hour upon a memorandum about anything, let alone the Dardanelles, was infuriating.

Swinton, however, eventually prevailed upon me to lend a hand, on the distinct understanding, pressed for by me, that it remained a hidden hand. After all, this intrusion of his did provide some sort of opportunity for putting the situation plainly before the Committee, and for expressing a vertebrate opinion. We proceeded to the Club and dined together, and thereafter, refreshed and my equanimity restored by a rest and hearing the news from across the water, we grappled with the subject in the C.I.D. office.

¹ *Experiences of a Dug-out*, p. 159.

' Ole Luk-Oie ' could be trusted to put a thing tersely and with vigour once he knew what to say, and the document did not take long to draft. We took the line that in the Gallipoli Peninsula it was a case of getting on or of getting out. The core of this memorandum is quoted in the ' Final Report of the Dardanelles Commission,' where it is pointed out that no mention is made of a middle course. This was intentional. A middle course was regarded by us as wholly unjustifiable, although it was the one which the Dardanelles Committee adopted ; for that body did not take our advice—it neither got on nor got out."

Our joint effort was duly circulated to the members of the Committee late that night. But at the meeting next morning it did not appear that it had been read by many. Considering the extent to which they were "*papèrassés*," as we used to say [incorrectly] in France, this was not surprising. General Callwell is right in stating that our recommendation was not followed. But the question was one of immense complication ; and the difference in the views of the members of the Committee was pronounced. Moreover, as the Official Historian remarks in reference to the eventual evacuation,

" . . . it is always more easy to recommend than to assume the final responsibility for any important decision ; and the question now to be decided, affecting as it probably might, not only the lives of tens of thousands of brave men in Gallipoli, but the course of the war, and even the fate of the Empire, was as desperate a problem as any that faced the Government throughout the Great War." ¹

From the discussions at the meetings of the Dardanelles Committee attended by me, upon which much light is thrown by the Report of the Dardanelles Commission and by the Official History of the cam-

¹ *Military Operations—Gallipoli*, Vol. II, p. 428.

26. 8. 15

Prime Minister,

Armoured motor cars propelled on the 'Caterpillar' principle, i.e. for climbing over obstacles, are now in course of provision for the army.

The question has been dealt with in the past by the Admiralty, the War Office and more recently by the Munitions Department. It is now handled by the two last.

After consultation with members of the departments concerned I find that matters would probably be smoothed if a small interdepartmental Conference were assembled here to consider future action.

If you approve will you please initial this and return it, and I will carry on.

W. H. Swinton

NOTE WRITTEN BY COLONEL SWINTON ON 26TH AUGUST, 1915, REQUESTING THE AUTHORITY OF THE PRIME MINISTER TO CALL AN INTER-DEPARTMENTAL CONFERENCE FOR THE CO-ORDINATION OF ACTIVITIES IN REGARD TO WHAT WERE KNOWN AS "LANDSHIPS" OR "LAND CRUISERS."

THIS IS INITIALED BY MR. ASQUITH

paign, I can bear witness to the agony of doubt from which during the next few weeks its members suffered as to the right course to be pursued. At this critical juncture, when all were weighed down by anxiety and a deep sense of responsibility, the Minister who appeared to be the most affected by the dire aspect of affairs was Mr. Bonar Law, whilst Lord Kitchener seemed to be the most harassed by the complexity of the problems facing the Empire. The two most dynamic forces were Mr. Lloyd George and Mr. Churchill.

* * * * *

During the first half of August the vexed subject of departmental responsibility in regard to the landships was again raised by the arrival at the War Office of data regarding the German trenches which had been collected by G.H.Q.¹ This drew attention to the fact that the part to be played by each of the three departments involved had not yet been determined. The matter had reached a stage which called for the intervention of some authority above all departments. It was in this direction that I felt that I could best help. On the 26th, therefore, I asked and obtained the sanction of the Prime Minister to call an inter-departmental conference to co-ordinate action.²

The abrupt change in my position was both striking and encouraging. I contrasted my present and former circumstances, and began to realize the nature of the powers that I could now invoke. For ten months I had striven to enlist sympathy in a cause which I regarded as vital. My efforts, it is true, had been chiefly verbal, but they had finally been concentrated in an official paper, with the result just described. There had been no sudden accentuation of the urgency of the matter, yet, by a brief note, I had at once

¹ As asked by me on the 29th June.

² A facsimile of my note bearing Mr. Asquith's initials in approval is given here.

obtained authority not only to call the attention of three Government departments to it but to summon a conference between them.

This conference sat two days later, and was attended by representatives of the Admiralty, War Office, and Ministry of Munitions. Since the subject was one which most concerned the Army, the chair was offered to General Scott-Moncrieff. The meeting constituted an important step, for it was the first occasion on which the question was discussed round a table, as it were on neutral ground, by all the departments interested.

Briefly, the conclusion reached was that the Admiralty should continue to experiment and design, taking its instructions as to requirements from the War Office. When this work had been carried sufficiently far, it was to be handed over to the Ministry of Munitions.¹ The efforts of all were thus set on a clearly defined and agreed basis, and continued without misunderstanding.

* * * * *

Hankey now returned from Gallipoli and resumed his post as Secretary of the Dardanelles Committee. In that capacity he attended the meeting on the 31st, and gave a verbal report of the situation out there in amplification of the very full report he had already submitted. My reversion to Assistant Secretary gave me more time to devote to the landships, in which task, being himself an enthusiast, he gave me a free hand and all possible support.

* * * * *

Meanwhile, the Landships Committee had made substantial progress in the construction of an experi-

¹ The Inventions Branch of that department was engaged in separate investigations in caterpillar track propulsion for an oil-spraying apparatus or flame-thrower.

mental machine—later to be known as “*Little Willie*”¹—which had been put in hand on information furnished by the War Office shortly before my specification had been communicated. Half-way through September this machine was sufficiently advanced for demonstration, and on Sunday, the 19th, in company with Mr. d'Eyncourt and other members of his Committee, I went by invitation to see it perform. The trial took place at Lincoln, not far from the works of the constructors—Messrs. W. Foster & Sons. It came as a shock to me to find lining the fence on one side of the trial ground a large crowd of spectators, consisting of employés of the firm and their wives, who were present apparently with the full knowledge and permission of those in charge of the demonstration. I protested against this publicity, but it was too late to alter the arrangements. Luckily, from the point of view of secrecy, the machine failed to comply with the test to which it was put ; and in order to discount the revelation of what we were aiming at it was arranged that a report should be put about that the whole idea was impracticable and would be dropped. *Little Willie*, in addition to suffering from certain technical shortcomings, chiefly connected with the tracks, was unable to fulfil my conditions, for which, in truth, it had not been designed.

I was then conducted with some solemnity to a building near by. Here, behind tightly-closed doors, I saw a nearly complete, full-size wooden “mock-up,” or model, of a very much larger track machine expressly designed to meet these conditions.² Lieu-

¹ This machine was so christened at the end of January, 1916, in circumstances which will be described later.

² This model, both at this stage and after it had been translated into an actual Tank, was called H.M.S. *Centipede*. Later on the first actual Tank was known as “Mother,” and the original Mark I Tanks of the same type were called *Big Willies* in contradistinction to *Little Willie*.

The *Centipede*, which became “Mother,” was the prototype of

tenant W. G. Wilson, R.N.,¹ so I was informed, was the author of the general design, whilst Mr. W. Tritton,² of Messrs. W. Foster & Sons, was responsible for the tracks themselves.

Although an engineer, it took me some minutes to size the thing up at such close range. Its most striking features were its curious rhomboidal, or lozenge, shape, its upturned nose, and the fact that its caterpillar tracks were led right round the hull instead of being entirely below it. These were the *clou* of the design and the essential and original characteristics of the machine, and had been introduced to enable it to surmount or climb the stipulated vertical height of five feet. Its great length would also permit it to cross any gap up to nine feet in width. Various other details into which I need not here enter were pointed out by the designers, whom I congratulated heartily on a stupendous achievement.

Unwieldy as this contrivance appeared in the confined space in which it was housed, it promised to solve the most difficult problems involved—the power to climb and the ability to span broad trenches; and I felt that I saw in front of me—though only in wood—the actual embodiment of my ideas and the fulfilment of my specification. Other questions, such as those of armament and armouring, were comparatively simple matters, which could be settled once the main design had been achieved.

I was not attending the demonstration officially all the Mark I Tanks, or *Big Willies*, which took the field in September, 1916. It may help to avoid confusion if it is explained that “Mother” was a Male Tank. It was dubbed “Mother” before there were two sexes in the Tank species (see p. 227). In spite of the contradiction which attached to this name when Females appeared in the Tank Garden of Eden it continued to be used for the first machine. “Adam” would, in truth, have been more appropriate.

¹ Now Major W. G. Wilson, C.M.G.

² Now Sir William A. Tritton, of Messrs. William Foster & Sons, Engineers, of Lincoln.

and represented neither the War Office nor the Army. But when appealed to as the only military man present I suggested that such minor alterations as would enable *Little Willie* to function within its limited scope should be carried out, but that all efforts should be concentrated on producing at the earliest possible moment an experimental sample of the larger machine.

Dinner on the train on the return journey to London was a joyous occasion.

* * * * *

Two days later, on the 21st, our guns opened in the preliminary bombardment for our offensive at Loos—the terrible baptism of fire of so many of the Territorial and New Army troops. The thoughts of all who knew what was happening, were fixed on the battle front. Had we on this occasion sufficient guns and ammunition really to prepare the way for the infantry assault which was to follow? And if not, would gas, now to be used by us for the first time and from which so much was hoped, make up for our deficiency in artillery? And, if gas failed, were we once more to have a repetition of our May offensives?

Inevitably my mind turned to the embryonic lath monster crouching between four walls, sinister and potentially menacing, but as yet inert and as powerless to help as the babe unborn.

On the 25th our infantry went over the top. And when next I saw the dummy—four days later—sufficient news had come through to reveal, partly, at any rate, the pitifully small result of the latest attempt to pit bodies against machine guns and wire—and the cost.

* * * * *

Construction was now pressed in both directions. The defects of *Little Willie* were made good, though in point of fact that machine had really faded out of

the picture. The *Centipede* was the only thing that mattered, and arrangements had now to be made for its inspection by those concerned in the questions of armouring and armament, so that the wooden model might be translated into a practicable fighting machine at the earliest possible moment. In anticipation of some such step, I had requested three weeks previously that G.H.Q. should be asked to select some representative officers to be in readiness to come over from France on receipt of a telegram.

The conference for inspection assembled on the 29th September, Mr. d'Eyncourt, who had officially called it, being in the chair. It was a meeting of all the talents. At it were representatives of the Admiralty Landships Committee; the Ministry of Munitions; the General Staff; the Master-General of the Ordnance; the Quartermaster-General; the Ordnance Board; G.H.Q., France; the constructors; and one or two others, including myself: nineteen in all.

At the experimental ground of the Trench Warfare Department at Wembley Park, guarded by sentries and screened off in an enclosure such as might have sheltered a coker-nut shy or the fat lady at a fair, the model of the *Centipede* brought up from Lincoln, was shown to us. Among so large a gathering of professional soldiers Mr. d'Eyncourt was reluctant to take the lead in the deliberations. Since it was urgently necessary to ascertain official opinion on certain vital matters at that meeting, I mounted a convenient packing-case, and with the chairman's permission put the points for consideration to those present. The principal questions were the main and secondary armaments. The more important of the conclusions reached were that the design of the *Centipede* should be followed, that each machine should carry one 6-pr. Q.F. gun in a sponson on each side, and one machine gun and four automatic rifles. The

reasons for the selection of the 6-pr. and the rejection of other types of gun contemplated need not be recapitulated. The 6-pr. fired a sufficiently heavy shell to knock out machine guns ; and a point of crucial importance was that, though the Army was not in a position to supply any of these weapons, the Navy we were informed could, and would, provide one hundred by the time that any landships could be ready for their armament. It was indeed fortunate that the Senior Service was able to help, for otherwise there would have been a deadlock in regard to guns.

The situation was peculiar. This conference was called by the body to which the development of the landship had been entrusted ; it included amongst its members delegates from every department interested ; and it reached unanimous conclusions which were circulated for confirmation to those departments. They were at once agreed to by the Chief of the Imperial General Staff at the War Office who—among others—favoured collaboration in the matter of armament. But in one branch of the War Office a similar spirit was not observable. That branch had been given its chance to take the lead in the creation of the new weapon, had not done so, and had seen the matter pass into the hands of others more alive to its importance—who were now forcing the pace. Dismay at the unusual procedure which had been adopted in unprecedented circumstances seemed now to obscure vision as to the urgency of the object.

At any rate, by those now responsible for executive action the conclusions were accepted as having settled most of the outstanding doubtful points, and the guarantee of the Admiralty as warranting the incorporation of the 6-pr. gun in the design. The construction of one landship therefore proceeded.

So much, indeed, had now been fixed, that I was able—as a sequel to what I had written in June—to set down on paper my further views on the proper

employment of the machine gun destroyers, or landships, based on more complete knowledge of their probable nature. This was an attempt on my part to think out and formulate in advance a considered scheme for their action, and to give a sufficiently detailed description of the machines themselves to convey some idea of their powers and limitations to those who would have eventually to use them. During the first half of October I completed this memorandum, except as to certain particulars of armament and performance which could be definitely stated only after the experimental machine had been tested practically. It followed, therefore, that it could not be put forward until January at the earliest, which, however, would give ample time for it to be studied before the New Arm could take the field.¹

About this time we were able to borrow from the War Office a German machine gun and ammunition, which came opportunely for experiments in the resistance of hardened steel plate to determine the thickness of the bullet-proof protection required for the landship.

* * * * *

Those officially concerned in the landship movement were not the only people striving to evolve some mechanical device to assist in breaking the German front. Others also had been thinking in this direction ; and different suggestions were being put forward. On the 25th September a Mr. A. C. Nesfield called to show me a small working model of a landship invented by himself. In outline it resembled the *Centipede* which I had seen at Lincoln a week earlier. He demonstrated this machine in my office, making it climb over books and other objects. I was so struck with its performance that I at once took the inventor across Whitehall to Mr. d'Eyncourt, in whose hands

¹ See p. 198.

I left him, as the investigation of design was a matter for the Landship Committee.¹

Another suggestion reached me in the beginning of October when I was sent a copy of a scheme for attacking the German front evolved by an officer in France, who like myself had been impressed by the failure of our current methods.² His plan was based on surprise, which was to be attained by the sudden advance of a large number of motor-driven cross-country machines and the omission of the usual preliminary bombardment. The machines were to be propelled on the Pedrail system—which was somewhat similar in nature to that of the caterpillar track. Their main armament was to consist of means for the ejection of poisonous liquids, such as a hydro-cyanic, or a cyanide of potassium, solution. Machine guns were to form the secondary armament. No technical details of the vehicles were given, but their function was to be to overrun the enemy first line and then to spread out laterally. This scheme had been before the War Office two months earlier. By the time it came to my notice the *Centipede* was being built to carry out in principle what the author proposed should be done by his Pedrails.

I was also shewn an old copy of the *Strand Magazine*

¹ I heard no more of Mr. Nesfield and his invention until the following May, when he again called on me. I was, of course, unable to divulge to him in so many words what had already been achieved, but I did point out that there was not much to be gained by his pressing his own design.

I make no mention of Mr. L. E. de Mole, who forestalled all of us by the proposal for a caterpillar machine which he put forward to the War Office in 1912. I knew nothing of this at the time I am describing nor, indeed, till the facts were revealed before the Royal Commission on Awards to Inventors, which sat in November, 1919.

² I discovered later that the author of this scheme, which had been suggested in June, was Major (now Colonel, retd.) A. I. R. Glasfurd, of the Indian Army.

of 1903, containing Mr. H. G. Wells' marvellous forecast—*The Land Ironclads*—in which immense armoured machines, propelled on the Pedrail system, were employed in land warfare. I had read this story when it first came out, but had looked upon it as a pure phantasy and had entirely forgotten it. The development of the internal-combustion engine seemed likely to bring about the realization on a less grandiose scale of Mr. Wells' dream.

Among other proposals for overcoming the German defence was one to destroy trenches by means of high-pressure water jets similar to the "monitors" used in surface mining to wash away the face of an excavation. In the first week in November, on behalf of the War Committee, I witnessed some experiments in this method carried out at the power plant of the Aluminium Works at Kinlochleven in Argyllshire, where a great head of water was available. At a range of 100 feet a 6-inch jet disintegrated parapets in a shower of liquid mud and stones and flung filled sandbags up into the air, but the system was inapplicable to the Western Front, where the necessary pressure could be produced only by pumping.

* * * * *

My work and position brought me into contact with many people and with various interests. About this time one or two people called to see me whose visits had far-reaching results. One of these was Colonel Bowman-Manifold, of the Engineers,¹ Director of Signals of the Mediterranean Expeditionary Force, who had just arrived on leave from the Dardanelles via Salonika, where some of our advanced troops had already landed. Since there was only one cable to that place, the line from Mudros, Manifold was much exercised about the difficulties of communication

¹ Now Major-General Sir Michael Bowman-Manifold, K.B.E., C.B., C.M.G., D.S.O.

which must inevitably arise so soon as our numbers in that area increased. Not only would there be congestion and delay, but the situation would be intolerable, owing to the fact that the Salonika end of the existing cable was in the Greek post-office, which placed the efficiency and secrecy of our external communications entirely at the mercy of the Greeks. The only remedy for this, in his opinion, was to lay a second cable from Mudros direct to British headquarters on the mainland—which called for immediate action from home. It was an affair of minutes to place Manifold in touch with the Director of Military Operations at the War Office. The latter acted promptly; and within a few days the cable-ship *Electra* appeared in the Eastern Mediterranean and laid a special line, thus ensuring the communications of our Salonika Army.

Towards the end of October there came to see me two officers—Brigadier-General Hill¹—whom I knew slightly—and Major George Lindsay,² of the Rifle Brigade, a keen member of the Machine Gun School staff at G.H.Q., whom I had got to know well earlier in the year during my frequent visits to Wisques. Figuratively, they fell on my neck, and when the sulphurous tone of their conversation abated I was able to discover the reason for their visit.

Hill had been appointed Commandant of the new Machine Gun Corps—the formation of which had just been authorized—with Lindsay as his Chief of Staff. They had come up from Grantham, where, after some orders and counter-orders, they had taken over and organized the hut camp for the reception of a large number of men as the centre where the corps was to be raised and trained. Then suddenly, though the creation of the unit had been sanctioned, its head-quarter staff appointed, and accommodation provided,

¹ The late Brigadier-General H. C. de la M. Hill, C.B., C.M.G.

² Now Brigadier-General G. M. Lindsay, C.M.G., D.S.O.

an edict had been issued by the War Office that no men were to be recruited for it or transferred to it.

To those who had worked for the creation of this corps and were responsible for its future, this order came as a thunderbolt, for, if not rescinded, it put an end to the efforts of months to place us on an equality with the Germans in this particular direction. Far more than a disappointment to individuals, it would have been a disastrous handicap to our forces.

Both my visitors were under the impression that the sudden reversal of policy was due to Lord Kitchener, himself persuaded to it by the hostility to the project which had all along existed at the War Office and at G.H.Q. They had been unable through official channels to get this order reconsidered and despaired of saving the new baby which was being strangled at birth. In this predicament, knowing that I was a believer in the need for a Machine Gun Corps, and all that it implied, and also that I could be trusted to help if it were in my power to do so, they had come to me for advice.

I had been so long absorbed in the contemplation of ways and means for destroying the enemy's machine guns that I welcomed the opportunity of giving a helping hand to our own.

* * * * *

The explanation of how such a situation had come about is as follows: By November, 1914, the immense wastage of our originally slender force of trained machine gunners caused by five months' fighting had led to the establishment in France of a school for training officers and men in machine gunnery. It was under the command of Major Baker-Carr—my erstwhile chauffeur—who had been a machine-gun instructor at the School of Musketry at Hythe. Under him its value was established and it grew rapidly in size and importance.

There was then a further development. The Germans were armed with the same gun as we were. But they had started the War with a greater appreciation of its true value, and with a *corps d'élite* of specialists to handle it.¹ During the winter of 1914-15, influenced by these facts, the staff of the Machine Gun School had continually pressed, in the teeth of inexplicable opposition, for an increase in the establishment of machine guns with our infantry from two to four per battalion. In February, 1915, this had been sanctioned. It then became obvious that to meet the enemy on equal terms it was necessary for us, also, to entrust the employment of our weapons to a specially trained body. In the spring of 1915 a proposal for the creation of such a force, originally made by Lindsay at the close of the previous year, was put forward by Baker-Carr and by Lindsay, who had joined him. It was for many weeks resolutely resisted at G.H.Q.; and the story of the beginning of the prolonged struggle with the General Staff at St. Omer and the opposition raised at the War Office—except by Lord Kitchener himself—has been fully described by Baker-Carr.² Pertinacity grafted on common sense eventually prevailed, and on the 22nd October, 1915, a Royal Warrant authorizing the formation of the Machine Gun Corps was issued.

* * * * *

After this S.O.S. from Hill and Lindsay, on the assumption that they were correct in thinking that Lord Kitchener was the source of their trouble, I

¹ In spite of the terrible damage it inflicted on us, there was no body of men in the whole German Army which so consistently won our admiration for its skill and bravery as its corps of machine gunners.

² *From Chauffeur to Brigadier*, by Brigadier-General C. B. Baker-Carr, C.M.G., D.S.O. But the formation of machine gun battalions as advocated was not sanctioned until early in 1918.

devised a way round the obstacle.¹ I knew that the Secretary of State was on the point of starting for the Near East, and felt that even if he were opposed to the scheme, something might be achieved if it were brought before the War Committee in his absence.²

The difficulty, however, was to conceive which, if any, member of that Committee except the Secretary of State would have a justifiable reason for intervening or questioning the action of the War Office in what was a purely military matter. In this quandary it occurred to me that as the Ministry of Munitions was pressing on the production of machine guns in unheard-of quantities, its head—Mr. Lloyd George—would have some logical grounds for inquiring what preparations were being made for using the stream of weapons which he would shortly be pouring into the lap of the Army. I therefore obtained from the statistical branch of the Ministry a forecast of production. This was 10,000 guns for the first three months of 1916, and 29,000 for the next three.

Armed with these figures and a few notes on the tactical value of the machine gun, I went to Mr. Lloyd George. He at once saw the danger of the reactionary and irrational course being pursued; and was more than a little disturbed at the prospect of time, money, and effort being wasted in manufacturing arms for which there would be no users. Within a week he took up the matter with the War Committee. Though the difficulty of finding men in the existing situation was great, the Chief of the General Staff, General Sir Archibald Murray, was entirely in sympathy. As a result, the fiat went forth that the new

¹ It was not long before I came to the conclusion that Lord Kitchener was not responsible for this absurd change of front. This view is borne out by Baker-Carr's book which describes the history of the origin of the Machine Gun School and the Machine Gun Corps.

² Lord Kitchener left London on 4th November.

Machine Gun Corps should be furnished with men up to the number of 10,000.

Within a very few days a stream of men, transferred from various infantry units at home, began to pour into Grantham from all parts of the country.

The above is one aspect of the birth of the corps which did such valuable work up to the end of the War and, by November, 1918, had grown to a strength of 6,432 officers and 124,920 other ranks. An interesting and remarkable feature is that Mr. Lloyd George—a Civilian Minister—not only supplied it with its weapons but was mainly instrumental in providing it with men.

* * * * *

At the beginning of November I asked the War Office to obtain a supply of the German armour-piercing rifle-ammunition, and also of the ammunition with the new copper-covered bullet, which according to report the enemy had been forced to introduce owing to the scarcity of nickel. Accounts now appeared in the papers—some illustrated—of the capture by the French in the German front line of armoured cupolas equipped with light Q.F. guns. I had long been anxious lest, in order to economize in man-power, the Germans might follow the principle of “the maximum of fire and minimum of meat” and instal such cupolas at intervals along their front.¹ The Q.F. guns for this purpose might, I thought, be withdrawn from the ships then bottled up in harbour, or from the flanking defence of forts some distance from the Front. Their appearance would be a deadly menace to the landships, which were to be bullet-proof only and incapable of resisting any type of shell. I therefore asked that G.H.Q. should be requested to

¹ Such a course would have been only to anticipate their policy in the construction of “pill-boxes” in 1917, the presence of which seemed to come as a surprise to so many.

investigate the subject, so that, if necessary, the armouring of the landships might be taken up betimes.

After a month a non-committal reply was received, which was of no value as a guide, and I pressed for more definite information. I also asked for any reports of previous trials of the resistance of light armour to small high-explosive shell, and suggested that experiments might be undertaken with captured German field guns.

* * * * *

Meanwhile, Mr. Churchill had not forgotten his *protégés*, the landships. In November he had joined the Army in France, bearing, as he informs us, a good gift—"the conception of a battle and a victory."¹ Having for several months had a similar conception myself, I can fully understand and sympathize with his feelings in this matter. On the 3rd December he submitted to Sir John French a memorandum entitled *Variants of the Offensive*. The first of these variants was *The Attack by Armour*, which covered the question of shields to be carried or pushed by men, and machines to be propelled on the caterpillar system. In its broad lines, and in part, this paper was a re-statement of what he had written in January, 1915. And it was in general agreement with the views I had myself put forward in October of the previous year, had recorded in my memorandum of June, and further elaborated in October. Beyond covering more ground, he differed from me in contemplating the use of shields, which I did not consider practicable, and in recommending that the action of caterpillars should be confined to the hours of darkness, which to my mind was not advisable—even if possible. On a minor point of fact in his appreciation of the actual situation in December, 1915, he was misinformed. There may have been seventy "caterpillars" in existence, as he

¹ *The World Crisis*, Vol. II, p. 86.

mentioned, but, if so, these were tractors of the type tried for crossing trenches and rejected by the War Office in February, and were not capable of what he had in view. Of caterpillar machines specially designed for that purpose there was only one—*Little Willie*—which had been discarded after trial, and the experimental *Centipede* still on the stocks.

As November and December passed, the completion of the latter was pressed on with the utmost vigour by the Director of Naval Construction's Committee—as, for secrecy, the erstwhile Landships Committee was now called. During this time, by suggestions, by acting in liaison between the people concerned, and by calling them together when consultation was necessary, I endeavoured to give to those who were doing the technical work of production the assistance for the want of which they had languished.¹

Half-way through December, as the completion of the experimental landship was drawing near, it seemed advisable, in order to avoid delay, to settle beforehand certain points which must arise if the machine should prove a success and be asked for by the Army. I therefore drew up a memorandum summarizing the existing situation and dealing especially with the future supply of the machines in bulk, training, provision of personnel, and finance.² With General Scott-Moncrieff's concurrence a fresh meeting of the Inter-Departmental Conference (of the 28th August) was called to consider "The Present and Future Situation regarding the Provision of Caterpillar Machine Gun Destroyers or Land Cruisers."

This conference—also one of all the talents—sat on

¹ In his evidence before the Royal Commission on Awards to Inventors, which sat in October, 1919, Major T. G. Hetherington stated: "As soon as General Swinton interested himself we got whatever we wanted."

² This memorandum, which explains the situation in full, is given in the Appendix.

the 24th December at the offices of the Committee of Imperial Defence, its members including representatives of the D.N.C.'s Committee, the Admiralty, the Ministry of Munitions, and the branches of the War Office concerned in the questions which were to come under review. It was confirmed during the discussion that the Admiralty would provide one hundred 6-pr. guns on the demand of the War Office, that it wished to relinquish the experimental work as soon as the machine being built had been handed over, and that it was not willing to undertake the supply of machines. The Ministry of Munitions, in view of its other commitments, also refused to be responsible for supply. The most important of the recommendations made were that if the Army wanted landships they should be furnished by a special executive supply committee, which would take instructions from the War Office, and have authority and finance to place an order for fifty machines as a start; and that the War Office should take preliminary steps for raising a force of 75 officers and 750 other ranks if and when it demanded the machines.

It was on the morning of this day that I first got into touch with Lord Kitchener on the subject of machine gun destroyers. Having heard of what was going on, he sent for me. He was, however, unable to see me, and it was to his personal military secretary¹ that I explained the situation.

As secretary to the conference, I was instructed, when drawing up the report, to try to find some non-committal word to take the place of "landship" or "land cruiser," which tell-tale names, it was realized, gave away the whole secret of what we were aiming at. That evening, therefore, when drafting the report, I discussed with my colleague, Colonel Dally Jones,² possible words which might be substituted. The

¹ The late Lieutenant-Colonel O. Fitzgerald

² The late Lieutenant-Colonel W. Dally Jones, C.M.G.

As soon as a machine can be produced,
the first thing the Secretary of State for War
considers necessary would be to test its practical
utility under field conditions; without such a
test we may be wasting material and men uselessly.

29 December 1915.



MINUTE BY LORD KITCHENER AFTER SEEING THE REPORT OF AN INTER-
DEPARTMENTAL CONFERENCE SUMMONED BY AUTHORITY OF THE PRIME
MINISTER ON THE 24TH DECEMBER, 1915

structure of the machine in its early stages being boxlike, some term conveying the idea of a box or container seemed appropriate. We rejected in turn — " container " — " receptacle " — " reservoir " — " cistern." The monosyllable " tank " appealed to us as being likely to catch on and be remembered. That night, in the draft report of the conference, the word " tank " was employed in its new sense for the first time.

And thus, on Christmas Eve, 1915, was given a new significance to a simple little English word, which, nine months later was to echo round the world and eventually to become incorporated in the language of every nation possessing a military vocabulary.¹

The year was not to end without a sign from Lord Kitchener. On the 29th December, having seen a copy of the draft report of the conference, he wrote the following minute :

" As soon as a machine can be produced, the first thing the Secretary of State for War considers necessary would be to test its practical utility under field conditions: without such a test we may be wasting material and men uselessly."²

* * * * *

Another year had passed. The end of the struggle seemed no nearer. Armies, exhausted, battered and bleeding, stretched from the Channel Ports to the Sea of Marmora. That of the British, which had expanded beyond all recognition and now included the New Armies, Territorials, Dominion forces, and the remnants of the " Old Contemptibles " had paid dearly for its experiences of the year. Rebuffed and disappointed, but no more downhearted than their pre-

¹ According to the current report, the German equivalent which went echoing down the corridors of time was :

Schützengrabenvernichtungspanzerkraftwagen !

² This minute is reproduced here in facsimile.

decessors, our troops lay licking their wounds, awaiting the next round. In their turn, they were hoping for reinforcements. And, though they knew it not, among those reinforcements was to be the fruit—not fully ripe—of the seed planted in 1914.

CHAPTER X "FROM THE REALMS OF IMAGINATION"

A Great Day

[January-February, 1916]

FOR the promoters of the Tank the New Year started hopefully. We had not yet reached our goal; but we felt that we were nearing it. All immediate doubtful points had been settled; the time for conferences was past; and there was a truce to the writing of memoranda, and to efforts to persuade and convince. Things now lay in the hands of the engineers and constructors and the workers toiling night and day in shop and factory. Beyond their activities all that could be done elsewhere was to prepare for the new baby, the date of whose birth was to be about half-way through January.

By this time Sir John French had been succeeded as Commander-in-Chief by Sir Douglas Haig, to whom Mr. Churchill's paper on *Variants* had been passed. Sir Douglas Haig, who—as it has been put—"as yet 'knew not Joseph,'" ¹ read this paper on Christmas Day; and early in January sent over to London Major H. J. Elles, R.E., a member of the staff at G.H.Q. ² to ascertain what progress had been made in the matter of machines for attacking trenches.

Meanwhile, concurrently with the work going on at Lincoln, steps were being taken to find and prepare a suitable secret trial ground, conveniently near London, where the *Centipede* could show its paces when

¹ *The Tank Corps*, by Major Clough Williams-Ellis, M.C., p. 13.

² Now Major-General Sir Hugh Elles, K.C.M.G., K.C.V.O., C.B., D.S.O.

ready. After some search the D.N.C.'s Committee selected Hatfield Park. There a steeplechase course was designed by Hetherington and myself; the "jumps" being of the same dimensions as those of the latest type of German defences in France, which would enable the machine to prove that it could comply with the conditions laid down.¹ The difficulty was to get it constructed. But here Home Defence Headquarters came to our aid, and by the time the *Centipede* arrived by rail from Lincoln the course was ready.² The machine first moved under its own power on the 13th January, fired its guns a week later, and reached Hatfield station on the 28th. There it was off-loaded at night and under the greatest precautions driven from the station to Hatfield Park, where it remained carefully guarded.

It seemed essential that the shell-crater, which was one of the obstacles to be negotiated, should, in order to provide the correct texture of soil, be formed by explosion and not by excavation. But it was not easy at short notice to find the technical troops to place and fire the necessary charges. After spending an entire afternoon motoring round various Territorial Headquarters near London Stern and I succeeded in locating a R.E. unit and borrowing the services of a subaltern and a detachment of sappers. How the course was actually made ready can best be gathered from an essentially accurate—but not too serious—account written by myself in 1922 :

" On a bright and frosty morning in January, 1916, a handsome motor-car might have been seen wending

¹ A programme, with a description of the machine, plan and diagrams was secretly printed for issue at the trial.

² To obviate confusion, the first Tank, hitherto called the *Centipede*, will henceforth be called "Mother," by which name it is generally known. Both it and its discarded predecessor were originally called *Centipedes* when under construction, this being the registered pre-war trade-mark of Messrs. W. Foster & Sons for all the chain-track machines built by them.



PHOTOGRAPH OF THE ORIGINAL TANK—CENTIPEDE, "MOTHER," "BIG WILLIE,"
AFTERWARDS KNOWN AS THE MARK I TANK

its way—as the story-books say—along the great north road from London towards the ancient town of Hatfield. Before reaching that place it took a turning to the east of the main road, and after a short run entered a magnificently wooded domain or park. When the driver had satisfied the questions of a sentry in naval service dress posted at the gates of the park, the car sped up avenues lined with great trees, all dripping as the hoar-frost on their branches melted in the sun.

In the car the observant passer-by might have seen two figures—a lieutenant-colonel in khaki, wearing the insignia of the Staff, and a lieutenant in the service dress of the R.N.V.R. The former was a somewhat spare, if not cadaverous, man; the latter was built on more generous lines. The two might have been Mutt and Jeff; and the magnificent car did not belong to Mutt. In good sooth the two officers were on their way to inspect progress on the experimental obstacle race-course, which was then being prepared for the secret trial of H.M. Landship *Centipede*, which had just been completed at Lincoln. This machine—the first of the Mohicans, so far as Tanks are concerned—was also known as ‘Mother,’ in spite of the fact that it was a male machine, there being at that time only one sex in the Tank world.

This course was in Hatfield Park, which had been lent by Lord Salisbury for the experiment and was an ideal place, far from prying eyes, for the trial of the new monster—the machine-gun eater—from which so much was hoped by its originators and backers.

When the car was finally halted at the foot of a slight hill by another sentry the two occupants alighted and walked on. As they topped the slope a curious sight met their eyes. Not far off was a party of men busy as beavers—obviously digging trenches. The bulk of them were in a greyish, greenish, foreign-looking khaki uniform. The two officers stopped dead, as though petrified. Then their hands met; and they stood still, hand in hand,

like the 'Babes in the Wood.' It was not long, however, before Mutt, with his soldier's eye, appreciated the situation and gave a name to it.

'My God!' he sobbed. 'The Boches have landed!'

'So they have,' gasped Jeff. 'But we'll sell our lives dearly,' and he felt for the automatic pistol which he was not carrying.

But, in point of fact, they were mistaken. The design, construction, and testing of 'Mother' were at that time being carried out by the Admiralty, and the construction of the trial course was one of the duties of the naval unit, No. 20 Squadron of the Armoured Car Division, R.N.A.S., which had been in charge of the experimental work on the new machine since the beginning. But in order to supplement their numbers, as no regular soldiers were available close by, recourse had been had to the nearest volunteer organization, and a strong working party of the 3rd (Mid Herts) Battalion of the Herts Volunteer Regiment was lending its help to the naval detachment. There were, except for the lieutenant-colonel, no soldiers in the picture, nothing but the volunteer naval ratings and the 'G.R.' volunteers in their greenish uniforms.

The obstacle course needs no description, beyond saying that it consisted of a length of British trench and wire, and a length of German trench and wire, with the intervening No Man's Land. With kindly thought, those responsible for the selection of the site had pitched upon a portion of the private golf course in the park, and right across it, in No Man's Land, was an artificial swamp formed by damming a small stream. This was an endeavour to reproduce some of the terrain to be met with in Flanders.

It did not take Mutt and Jeff long to discover their error, and to join the happy toilers up to their ankles in yellow clay. The following Saturday they spent the whole afternoon motoring round the counties of Middlesex and Hertfordshire, in an effort to discover a field unit R.E., equipped with explosives and

officers trained to use them. Explosives were necessary in order to obtain shell craters with the proper shattered soil as a test for the climbing power of the machine. In this quest they were successful, and later an R.E. officer and some sappers appeared, to assist with their devilish arts.

The arrangements for the co-operation of the Mid-Herts Volunteers had been made on approved lines. They had been warned, on receipt of the code word ‘Puddleduck,’ to proceed to Hatfield, where they were to be billeted, in order to carry out some special digging work of great importance. They had received detailed orders of what they had to do upon their arrival, but had not been informed of the object of their labours. It therefore happened that on the following Sunday, when Mutt and another officer arrived on the scene of activity, the former again received a rude shock. The unit had decided to treat its duty on Sunday as a kind of field day. The working-party furnished had been very much increased in strength. The landscape was full of sentries, pickets, and ‘Cossack’ posts. A first-aid station had been set up, with full medical staff, and other conveniences of a standing camp had been established. A band was playing ‘Now we shan’t be long,’ and listening to its music, and seated in motor-cars drawn up along the road close by, were some of the wives and lady friends of the delvers. And right well were the latter delving—men of all professions, some in light buttoned boots which were almost sucked off their feet by the stiff clay.

And there, at the edge of a plantation, not two hundred yards away, and in full view of every soul present, spectators and workers, squatted two sinister shapes swathed in tarpaulins, which had arrived the previous day. One was much larger than the other ! These were the first machine (with track underneath), which had been discarded, and the first Tank ‘Mother.’ They could not be moved without being uncovered, and so nothing was said about them, and they were allowed to remain where they lay. It

was hoped that in the excitement of the 'gala day' the presence of the strange objects would remain unobserved, or their true nature at least unguessed. Some of the officers were informed about the secrecy of the whole affair and of the necessity of warning all ranks to say nothing of what they had been doing or had seen, and were invited to witness the subsequent trial of 'Mother.' Further, Mutt and his companion, realizing that any direct reference to the machines might only excite suspicion and arouse curiosity, descended to the meanness of the indirect lie, or deliberate *suggestio falsi*. Strolling up and down close to the lines of motor-cars, in full earshot of drivers and occupants, they discussed in loud and excited tones whether the 'motor pumps' would be powerful enough to drain off the water collected in the artificial swamp, at the same time looking towards the veiled objects.

The scheme worked. At any rate, if anyone present had an inkling of what was afoot or atrack, he did not give it away.

Though called 'Tanks' and later talked of as water-carriers, sometimes as snow-ploughs, this was the first and only occasion when the machines figured as pumps.

As the pair of shapeless masses nestled close together, their appearance suggested a gigantic canvas-covered sow with a sucking pig alongside her. And it was on that day that they received the names of 'Little,' and 'Big,' 'Willie.'"¹

On the 29th January "Mother" took a preliminary canter over the course before several officials of the Admiralty and War Office, the constructors, and others interested.² She carried out the set tasks with ease,

¹ Reprinted by the courtesy of the Editor of the *Royal Tank Corps Journal*.

² In all this, in fact, all through, invaluable work was done by No. 20 Squadron, Armoured Car Division R.N.A.S., which was under the command of Lieutenant-Commander R. McGrath. To this unit belonged Stern and Hetherington.

the most severe on this occasion being the climbing of a parapet five and a half feet high, with a take-off from deep mud. The performance promised well for the full-dress official inspection to take place four days later—upon which everything depended. All present were extremely pleased. Some were strangers to me, and I remember being much struck by the whole-hearted appreciation shown by a naval officer, who remarked that 3,000 machines should be ordered at once. This was Commodore Sueter, R.N.,¹ who, I then discovered, had been connected with the Admiralty side of landships since January and had been an advocate of caterpillar propulsion since February, 1915. On the other hand, an officer who had also done invaluable work in connexion with the landships, but who was a congenital pessimist, exasperated all near him by maintaining an expression of deep gloom as "Mother" carried out her truly astonishing performance, which he described as "not bad." It was not surprising that he was asked whether he expected the thing to fly.

Wednesday, the 2nd February, was the great day of the official trial. So far as was humanly possible everything had been done to ensure that there should be no breakdown. On this point I was particularly nervous, for so much hung in the balance. The history of the adoption of the machine gun had shown me how disinclined people were to make allowance for failings—however temporary and remediable—on trial occasions. It is the first impression which counts, and few possess that discriminating power of judgment which penetrates far below the surface of things.

The demonstration was attended by Lord Kitchener, Mr. Balfour, Mr. Lloyd George, Mr. McKenna, members of the Admiralty Staff, General Robertson, several senior officers from the War Office, those connected

¹ Now Rear-Admiral Murray F. Sueter, C.B., R.N., M.P.

with the creation of "Mother," and last but not least, representatives from G.H.Q.

It was a striking scene when the signal was given and a species of gigantic cubist steel slug slid out of its lair and proceeded to rear its grey bulk over the bright-yellow clay of the enemy parapet, before the assemblage of Cabinet Ministers and highly placed sailors and soldiers collected under the trees. And intense was the anxiety of its sponsors. But it went through its performance perfectly. On this occasion it crossed a trench nine feet wide, and more than fulfilled the conditions. Of the Ministers present, Mr. Balfour, Mr. Lloyd George, and Mr. McKenna were enthusiastic, and showed it. Mr. Balfour, indeed, took an almost childlike pleasure in the new toy.

Lord Kitchener, on the other hand, was entirely sceptical. In my hearing he said that the War would never be won by such machines, which would be knocked out by the enemy's artillery. He had already that morning, paid a surprise visit to Hatfield and discussed the Tanks at length on the ground with Mr. Tritton. "Mother" had then been put through her tricks for him alone, and he had dubbed the machine "a pretty mechanical toy." There can be no doubt that eighteen months of unceasing anxiety and superhuman responsibility had told upon Lord Kitchener. To this I ascribe his non-receptivity even then towards a new weapon, which he might have been expected to welcome, more particularly as so many others—not all emotional or enthusiasts—had been so much impressed by it. My disappointment was the greater, in that he was the man I most wished to convince.

However, at this exhibition in the show-ring, it was the opinion of the representatives of G.H.Q. which counted. As potential buyers they had come to inspect the sample before they placed an order. In this deal all would certainly have to pay the piper,

but it was "France" that called the tune. Though not exuberant, the buyers were very satisfied with the possibility now offered them of competing with the hitherto impregnable German defence. They committed themselves so far as to say that they would recommend the Commander-in-Chief to ask for some machines. Sceptical though Lord Kitchener was, he placed no veto upon the judgment of the Commander-in-Chief.

The King, who had been informed of the Tank idea and kept posted as to the progress made, now signified that he wished to see "Mother." A private trial was therefore arranged for the 8th February, and I had the honour of driving with His Majesty from Buckingham Palace to Hatfield Park. On the ground I presented to him the members of the D.N.C.'s Committee, the officers of No. 20 Squadron, some members of the firm of William Foster & Sons, and the designers of the machine. The performance of a week earlier was then repeated. The King followed every manoeuvre with great attention, expressed his satisfaction and congratulated the driver.

"Mother" was now sent back to her constructors at Lincoln; and in Tank affairs, except for certain preparations with a view to bulk production, there ensued a lull while G.H.Q.—whose motto apparently was "Softlee, slowlee, catchee monkee"—was making up its mind whether it wanted Tanks or not. I continued my efforts to ascertain to what extent the Germans were emplacing light Q.F. guns in their front line—a very important factor from our point of view.

By this time matters had progressed so far that I was able to fill in the blanks and complete the memorandum which I had written in October. This I give here in full, notwithstanding its length, for it shows how much was foreseen in those early days. It has an added interest in that it was upon the lines here laid down that the epoch-making Battle of Cambrai was fought on the 20th November, 1917, twenty

months after it was written.¹ At that battle the Tanks were given their first chance. For fourteen months after they had reached France, until Cambrai, they were consistently misused, in spite of the fact that copies of this memorandum were sent to the War Office in March, 1916, and also to G.H.Q. The passages italicized are as in the original.

NOTES ON THE EMPLOYMENT OF "TANKS"

(These notes as to measures of preparation and suitable tactics for Tanks are not intended to imply that the whole of our offensive operations are to be subordinated to their action. They are put forward as a basis for early discussion of the possibilities and requirements of an entirely new weapon, so that by the time that it is ready for employment everything possible may have been done to ensure its success.)

1. THE use made by the Germans of machine guns and wire entanglements—a combination which has such power to check the advance of infantry—has in reply brought about the evolution of the "Caterpillar" bullet-proof climbing motor, or "Tank," a machine designed for the express purpose of assisting attacking infantry by crossing the defences, breaking through the obstacles, and of disposing of the machine guns. It is primarily a machine-gun destroyer, which can be employed as an auxiliary to an infantry assault.

DESCRIPTION

THE POWER OF THE TANKS NOW BEING MADE
Progression.

2. The type of machine being constructed can travel at 4 miles per hour on the level, forwards or

¹ Though this offensive was framed on the lines laid down in my memorandum, it is a strange and remarkable fact that the staff of the Tank Corps headquarters, which actually initiated this action and drew up the plans for it, had no knowledge of the existence of the memorandum, then nearly two years old, until two months after the battle.

backwards, and at about 2 miles per hour over rough ground and when climbing.¹ It can cross parapets of up to 5 feet in height (even when revetted vertical) and span trenches or gaps up to 10 feet in width, and break through wire entanglements of British or German type.

(The armament has not been absolutely decided upon in all details at present.)

Offence.

3. The weapons of each Tank against *personnel* will be :

(a) Fire from Hotchkiss machine guns.²

(b) Possibly case shot from two 6-pr. Q.F. guns, one on each flank.

Its weapons against hostile machine guns are :

(c) Its own weight. This can in specially favourable cases, where the enemy's machine guns are situated in the trenches, be brought into play by rolling over the emplacements and crushing them.

(d) Fire from two Hotchkiss 6-pr. Q.F. guns, having arcs of fire from straight ahead to 30° abaft the beam, or 120° on each side. The shells are common, pointed, base fused, bursting on percussion or graze, and filled with black powder or some other low explosive. With the reduced propellant charge used in the guns carried, the projectiles will penetrate 2 inches of plate before bursting, and will therefore pierce the ordinary German loophole plate and the machine-gun and field-gun shield.³

¹ Or 110 yards and 55 yards per minute respectively.

² Experiments are being made with special short-barrelled Hotchkiss machine guns which will give accurate shooting up to a range of 400 yards.

³ The Hotchkiss 6-pr. Q.F. is a naval gun which has been adopted as being the only suitable weapon available. A reduced charge is employed because one-half of the guns supplied will be of single tube construction and cannot fire full charges.

4. Hostile machine guns which it is impossible or inconvenient to crush will be attacked by gunfire. It is specially for the purpose of dealing with these weapons ensconced in houses, cellars, amongst ruins, in haystacks, or in other concealed positions behind the enemy's front line, where they may not be knocked out by our artillery, and whence they can stop our infantry advance, that the Tanks carry guns. Being covered with bullet-proof protection, and therefore to a great extent immune from the hostile machine guns, they can approach sufficiently close to locate the latter, and pour in shell at point-blank range.

5. Though the assumption is that long-range fire will not be required for the above purpose, it may happen, owing to the speed of advance hoped to be rendered possible by the neutralization of the holding power of the enemy's machine-gun fire (which has hitherto been the most important factor in checking the momentum of our assaults) that the Tanks, along with our infantry, will be able, soon after the start of the offensive, to get within range of the German artillery position. The 6-pr. guns firing with reduced charges will give accurate shooting up to a range of 2,000 yards, and they are being fitted with telescopic sights so that full advantage may be taken of a chance of this nature should it occur.

Defence (Active).

6. As detailed above for offence.

Defence (Passive).

7. The hardened steel plates (up to 12 millimetres in thickness) with which the Tanks are enclosed, give complete protection against shrapnel balls, almost complete protection against rifle and machine-gun fire of any nature that is likely to be encountered, and considerable protection against the splinters of high-explosive shells that may detonate close by.

COMMUNICATION WITH THE REAR

8. As will be seen, it is proposed that the Tanks should accompany the infantry in its advance. They

will, therefore, to some extent share any methods of communication adopted for the infantry. But since they can convey any apparatus in safety from shrapnel and rifle fire, it may be an advantage for them to carry means of their own for communication with their headquarters in rear, to supplement that used by the infantry. Experiments are being carried out, therefore, in the following methods of communication, which will be alternative in their application :

Equipping a certain proportion of Tanks (say one of every ten) with small wireless telegraphy sets capable of action up to 5 miles. These would be used for code or abbreviated messages.

Equipping a certain proportion of Tanks (say one of every ten) with apparatus for laying a field telephone cable either on the surface of the ground or possibly buried 12 inches deep. These would be used for conversation in clear, and would also serve for artillery observation purposes.

Installing a system of visual signalling to the Tanks from the starting-line by means of miniature kite balloons. This would be limited in scope, and would work one way (forward) only, and would serve to transmit a few prearranged orders.

Installing a system of signalling from the Tanks by smoke rocket. This would be more limited in scope and would also work one way (backward) only, and would serve to transmit a prearranged signal.

LIMITATIONS TO PROGRESS

9. The exact size and nature of the streams that can be negotiated by the Tanks are not yet definitely settled, and will form the subject of experiment ; but it is certain that rivers or canals of a depth of water much over 1 foot, having a muddy bed, or having banks over 3 feet in height steeper than a slope of 1/1 cannot be crossed by them until a crossing with ramps and hard bottom has been prepared. The ordinary small bridges in the hostile zone, even if not destroyed, will not carry these machines.

Woods and closely planted orchards also form an absolute obstacle to their movement.

Though the Tanks can cross soft soil and muddy ground they will travel better in dry weather.

VULNERABILITY

10. *The Tanks will be destroyed by a direct hit of any type of howitzer shell.*

They will probably be put out of action by all except the most glancing hits of high-explosive shell fired by field guns.

They will probably be put out of action by all except the most glancing hits of shell fired from any form of high-velocity small-calibre Q.F. gun (such as the Germans are believed to have mounted in their defensive zone), which projectiles will, it is thought, penetrate the plating and burst inside the machine, thus immobilizing it by putting the whole crew out of action.

They may also be blown up by mines or land-mines.

Special stress is laid on the vulnerability of the Tanks to artillery fire of different natures, because it represents their chief weakness, and because the simplest and most quickly organized method for the Germans to counter their employment will be by emplacing large numbers of field and small quick-firing guns in the defensive zone. Nevertheless, though there appears to be no direct method whereby they can escape the risks from the projectiles actually fired against them, there are tactical measures which can (if carefully thought out and prepared for *before-hand*) be taken to reduce indirectly the number of such projectiles fired, *i.e.* the hampering by our own bombardment of the activity of the enemy's artillery over the sector of front concerned. Special allusion is made to this later. (See paragraph 39.)

IMPOSSIBILITY OF REPEATED EMPLOYMENT

11. Since the chance of success of an attack by Tanks lies almost entirely in its novelty and in the element of surprise, it is obvious that no repetition of it will have the same opportunity of succeeding as

the first unexpected effort. It follows, therefore, that these machines *should not be used in dribblets* (for instance, as they may be produced), but that the fact of their existence should be kept as secret as possible until the whole are ready to be launched, together with the infantry assault, in one great combined operation.

MEASURES OF PREPARATION

PLACE OF EMPLOYMENT

12. The sector of front where the machines can best operate should be carefully chosen to comply with their limitations, *i.e.* their inability to cross canals, rivers, deep railway cuttings with steep sides, or woods and orchards. And this should be done as long as possible before the moment of attack, so that time may be allowed for the execution of the work on the lines of communication and in the shelled area behind the front line necessary to allow of the machines coming up to position without delay when required.

CONVEYANCE TO THE FRONT

13. *Once the most favourable sector for the action of the Tanks has been located*, and therefore their exact distribution behind the front fixed, the best method of conveyance from the coast can be settled. This may be by road, by rail, or by barge, or possibly by a combination of road, rail, and canal, according to the communications available towards the chosen sector.

In any case, however, certain preparatory measures will have to be taken beforehand:

The roads to be followed will have to be reconnoitred and the bridges strengthened, or ramps cut to the rivers or streams; and the possibility of collecting at the right time sufficient railway trucks or barges of the type necessary to carry the Tanks will have to be investigated.

FRONTAGE IN ATTACK

14. The exact distance apart at which the Tanks should move forward in the assault is a matter for experiment, but it is thought that in order to enable them thoroughly to search the ground for concealed machine guns, to support each other mutually by their own fire and to sweep the German parapets sufficiently to permit of our infantry advancing more or less unscathed, they should not be more than 150 yards apart. It will serve to simplify present calculations if the interval be taken at a round figure of 100 yards. As regards the total frontage taken up, the number of Tanks under construction at present is 100 ; but since it is not safe to assume that more than 90 per cent. of the whole number available will be in line (to allow for the machines told off to work outwards and to work laterally for destroying wire), the front of attack of that number will be 9,000 yards, or 5 miles. For the sake of discussion this distance will be assumed in considering an operation undertaken by the whole of the machines available, the reduction of front where a lesser number is used being *pro rata*.¹

POSITION OF ASSEMBLY

15. This may be on a line parallel to our front line, and, say, some 2 miles behind it. Here the machines should remain sufficiently long for the crews to reconnoitre, ease, and mark out the routes up to the points where they will actually cross the front defences, and to learn all that can be discovered of the German front-line trenches and the defence zone behind it over which they have to advance.

¹ This calculation as to the extent of frontage will hold good whether the Tanks move forward in one continuous line or in groups with intervals between the groups so that certain areas may be "bitten off" by a lateral movement as soon as sufficient forward progress has been made. The selection of either method of attack is a matter of general tactics, and not one specially connected with the employment of Tanks.

16. The officers and men will be trained at home, as far as possible, to steer and operate over an imitation British and German trench zone by the aid of trench maps similar to our aeroplane maps of the German defensive positions.

17. Along the position of assembly the Tanks will not be distributed at equal intervals so as to attract the notice of hostile aviators, but will be placed amongst trees, in villages, etc., so as to obtain concealment.¹ From it they can move up early on the night preceding the attack to their *final positions* or starting-points, just behind where they will actually cross our trenches, and will wait there till the moment for advance (assumed to be just before dawn—see later) ; or, if this procedure is considered impossible, owing to the intensity of the hostile bombardment directed in the vicinity of our front line, they can move straight from the position of assembly during the night, so as to reach their starting-points just before the time for the advance. The routes to the front line will have to be marked for night work with special lanterns to show light towards the rear of our position.²

18. If it is considered advisable for any reason that the machines should go up to their final positions still earlier, and therefore remain there during the daylight, suitable pits will have to be excavated for them beforehand, so that they will not be visible to the enemy over our parapets. To confuse the enemy's air scouts several more pits than necessary will have to be dug some considerable time before the attack.

19. The starting-points will be 100 yards apart only approximately, and should be carefully chosen

¹ Special tarpaulin covers coloured so as to represent tile or thatch roofs can be made ready.

² A certain number of such lanterns can be supplied as part of the equipment of each machine. Allowing for delays caused in the dark to traverse the assumed distance of 2 miles from the position of assembly to the starting-points should not take more than two hours.

so as to be opposite some special enemy's points, such as located field or machine-gun emplacements and the forward ends of communication trenches, etc.

20. During the journey up from the coast, whether by road, rail, or canal, the Tanks will be encased in special tarpaulin covers marked "Drinking water only," or with some similarly misleading label. The guns and sponsons for each, will be carried on special trailers designed for the purpose, and can be placed in position on board and bolted up at whatever stage on the journey that is convenient.¹

TACTICS

(Only such points as appear to concern the use of Tanks are referred to.)

TIME OF THE ADVANCE

21. The most favourable time for the Tanks to advance, so as to avoid the chief danger to which they will be exposed, *i.e.* the hostile artillery fire, would be at night. But there are disadvantages in such a course which make its adoption inadvisable. Firstly, no infantry could accompany the machines, for the crews of the Tanks would not be able to distinguish the flashes of our rifles from those of the enemy—which would be all that they would have to go by in the dark. Secondly, it would not be possible for the drivers to see the obstacles in front of them, and they could not manipulate the clutches for climbing or steer the machines so as to avoid uncrossable spots. It seems that the best moment for the start will be just before dawn, so soon as there is sufficient light in the sky to distinguish objects to some extent. A start at such a time, also, will give the greatest number of hours of daylight for pressing on with the offensive.

¹ The Tanks are less noisy than might be expected, and it is thought that the sound of the bombardment from both sides and the noise of rifle and M.G. fire from the front line or behind it will mask that of the Tanks going from the position of assembly to the final positions.

SYNCHRONIZATION OF THE ADVANCE OF THE
TANKS WITH THE INFANTRY ASSAULT

22. The Tanks, it is thought, should move forward together, say, by rocket signal, sweeping the enemy's first-line parapet with machine-gun fire ; and after they have proceeded some three-quarters of the way across " No Man's Land," and have succeeded in attracting to themselves the fire of the German infantry and machine guns in the front line, the assaulting infantry should charge forward so as to reach the German defences soon after the Tanks have climbed the parapets and begun to enfilade the trenches.

23. Since not much difficulty is usually experienced in rushing the German first line after a thorough bombardment, it may be thought that it is unnecessary for the Tanks to precede the infantry assault or even to accompany it, and that they should be kept behind our line and only sent forward to help the infantry where and when the latter are held up by uncut wire and machine-gun fire. There appear, however, to be drawbacks to such a course :

24. It would result in unnecessary loss to the infantry, who will be able to discover the presence of uncut wire or of hostile machine guns only by finding themselves checked, shot down and unable to proceed. (It is to obviate such loss that the Tanks are being produced.)

25. It would result, also, in delay, as a check would have to be experienced by the infantry, a message sent back for the assistance of the Tanks, and the latter sent forward to clear away the obstruction. This would entail the otherwise avoidable expenditure of a considerable amount of time and a consequent reduction of the speed of the progress through the enemy's defensive zone (which may be in all some 3 or 4 miles in depth). It would therefore lessen the chance of the attack breaking through the defence whilst any beneficial effect that might be produced by its novelty was still in operation. This retardation of the advance might give the

enemy time to reinforce the threatened section of their line with men, machine guns, and, what is more important from the point of view of this special form of attack, with field artillery.

26. Lastly, it would result, it is thought, in greatly decreasing the chances of success of the Tanks themselves, owing to the fire of the German artillery which, it must be repeated, is their greatest danger. The reasons for this view are as follows: In whatever way the attack is made, whether it be of infantry preceded by Tanks or of infantry alone, so soon as it is launched and is seen by the Germans to cross our own parapets, the message will be sent back to the hostile artillery, who will put down a "curtain of fire." This curtain, it is believed, usually covers No Man's Land and our front line, so as to catch the assaulting troops, and also covers area between our front and supporting lines, so as to prevent our supports going forward. It takes place very quickly, but there is nevertheless an appreciable interval of time between the moment when our assault is launched and its occurrence.

27. If the Tanks are kept back anywhere near our front line until after the assault has started they may either be caught in this heavily shelled zone, or when required to go forward may be cut off by the curtain of fire from our infantry who have gone ahead beyond the German front line and suddenly found themselves checked and in need of help.

28. On the other hand, unless expectations are falsified, if the machines accompany the assaulting infantry, moving with it, or just ahead of it, as sketched out above, both will be across the enemy's front line and on their way to the second before the curtain of fire descends, and the latter will be behind them. It is hoped similarly that, owing to the prevention of the usual checks to the advance, which the action of the Tanks will ensure, by the time the German gunners shorten the range in order to provide a second curtain in front of their second line, our assault will have already have swept beyond that line.

29. The above anticipations are admittedly sanguine ; but if the Tanks are employed and are successful, it is thought that they will enable the assault to maintain most of its starting momentum, and *break through the German position quickly*. To enable the expected rate of advance to be maintained will necessitate the launching of a very large force of infantry from the first, so that the successive lines of defence may be rushed by fresh troops, and occupied and consolidated by others left behind.

30. It seems, also, that the infantry should include an unusually large proportion of bombers, to supplement the action of the Tanks, which will not have any such means of searching out hidden ground.

THE EXTENT OF THE OBSTACLE CLEARED BY THE TANKS

31. Each Tank will clear only its own width through the entanglement, and though some of the assaulting infantry may make use of these gaps, the fact that an attack by Tanks is to be made will not preclude the usual wire-cutting of our guns and trench mortars across the sector over which they operate. (See paragraph 39.)

ACTION OF THE TANKS AFTER CROSSING THE GERMAN FRONT LINE

32. Except for those few machines which are detailed to travel along the wire entanglements laterally (see paragraph 44), the Tanks will halt at the enemy's front line, keeping it under enfilade fire, only until our assaulting infantry have reached it, when they will proceed straight ahead at full speed for the German second line, as far as possible following up alongside the hostile communication trenches, which they will sweep with machine-gun fire, thus dealing with any German reinforcements and bombing parties coming up. Some of the infantry, armed with hand-grenades, should follow in their wake, to assist to search out dead ground

with bombs. At the same time, the " skipper " and guns' crews of the Tanks will keep a sharp look out for machine guns in the second line. When discovered, these will be shelled or, if possible, crushed.

EXTENT TO WHICH THE ATTACK IS PRESSED

33. The extent to which the attack is pressed, *i.e.* whether it is to be a step-by-step operation in which, after artillery preparation, a strictly limited advance is made over the front concerned and the gain of ground consolidated, and then, after the necessary pause to give time for a renewed artillery preparation of the enemy's new front line a further limited advance is made, and so on ; or whether a violent effort is to be made to burst right through the enemy's defensive zone in one great rush, depends on the decision of the Commander-in-Chief and the strategic needs of the situation. But, so far as is known, a step-by-step advance—which has the drawback of giving the enemy time to reinforce the sector threatened—is not a course recommended for any positive advantages which it possesses. It is a course which has been forced on us by the inability, with the means hitherto at our disposal, of infantry even after immense sacrifice of life to force their way through successive lines of defence guarded by machine guns and wire, of which none but the first can be thoroughly battered by our artillery.

34. Not only, however, does it seem that the Tanks will confer the power to force successive comparatively unbattered defensive lines, but, as has been explained, the more speedy and uninterrupted their advance the greater the chance of their surviving sufficiently long to do this. It is possible, therefore, that an effort to break right through the enemy's defensive zone in one day may now be contemplated as a feasible proposition.

35. Apart from the topographical limit placed on an offensive action of this nature for other reasons, the limits due to the power of the Tanks are very broad. Even taking the average rate of progress

during the actual attack at not more than 1 mile per hour, on a sector of country without natural obstacles, an advance of 12 miles forward could be carried out during the daylight hours by those Tanks which were not knocked out by gunfire. A movement on this scale will take our troops past the enemy's main artillery positions, and would, if successfully effected, imply the capture or withdrawal of their guns.

36. This being the case, it appears that when the Tanks are used the contingency of such an extended bound forward being made should be most carefully legislated for in the way of preparation to send forward reinforcements, guns, ammunition, and supplies. In regard to the replenishment at the end of the first day's fighting of the Tanks themselves with fresh crews and ammunition in the event of such rapid progress being made, schemes have yet to be worked out.¹

CO-ORDINATED ACTION OF ALL ARMS

37. The necessity for the co-ordination of all arms to work together in the offensive generally requires no remark here, but the desirability of the specially careful consideration of the subject in the case of an operation by Tanks requires some emphasis, since the orchestration of the attack will be complicated by the introduction of a new instrument and one which somewhat alters the chain of interdependence of all. A recapitulation of this chain will make the matter clear. The Tanks cannot win battles by themselves. They are purely auxiliary to the infantry, and are intended to sweep away the obstructions which have hitherto stopped the advance of our infantry beyond the German first line and cannot with certainty be disposed of by shell-fire. It follows, therefore, that the progress of the attack, which depends on the advance of the infantry, depends on the activity and preservation in action of the Tanks.

¹ Each machine will carry enough petrol for a journey of 60 miles.

38. The weapons by which the Tanks are most likely to be put out of action are the enemy's guns. The only means by which we can at the earlier stages of an attack reduce the activity of the enemy's guns are by our own artillery fire or by dropping bombs on them from the air.

39. It follows, therefore, that in order to help our infantry in any operation in which Tanks take place (which is admitted to be the rôle of artillery, also an auxiliary arm) the principal object of our guns should not be to endeavour to damage the German machine guns, earthworks, and wire, behind the enemy's first line, a task they cannot with certainty carry out, and which the Tanks are specially designed to perform. It should be to endeavour to help the infantry by helping the Tanks, *i.e.* by concentrating as heavy a counter-fire as possible on the enemy's main artillery position and on any field or other light guns whose situations behind the first line is known.¹ For this purpose, *i.e.* of spoiling the enemy's shooting for the period of the advance, a free use of gas or poison shells might be very efficacious.

40. At the same time, any disturbance which could be caused amongst the enemy gun detachments by the dropping of bombs of any nature would be valuable by every round which would be prevented from being fired.

41. If the above-mentioned assistance is given to the Tanks by the action of our artillery and aeroplanes, it will necessitate considerable previous preparation to this end over and above that entailed for the normal offensive. It will include special air reconnaissance beforehand in order to locate the enemy gun positions over the sector of the attack; the concentration of an extra proportion of *heavy* artillery for the purpose of making a special

¹ This refers to the action of our guns *after our attack has been launched*, and does not affect the question of the previous artillery preparation, which should be of a normal nature, to avoid rousing suspicion, except that special pains should be taken to knock out the enemy light pieces emplaced in the defensive zone.

effort against those of the enemy guns which can be directed on this sector; the collection of special ammunition, such as gas shells, and of bombs for the aeroplanes.

42. These measures may appear somewhat excessive in their extent and scope, but it is thought that the trouble entailed in carrying them out will be more than justified if they enable the Tanks to perform their functions of assisting the progress of the attacking infantry to an extent which seems possible.

AIDS TO THE ATTACK BY TANKS

43. In order to increase the confusion which it is hoped will be caused amongst the enemy by an attack by Tanks, and to assist in concealing the exact nature and the progress of these machines, it would be of advantage if their advance were heralded by clouds of smoke. The employment of gas, it is thought, may be dangerous, as the forward movement might be so rapid as to take our men into their own gas. The release of smoke only on the sector where Tanks are used might be accompanied by the release of gas and smoke elsewhere, so that the enemy would not know what was poisonous and what was not.

Though the co-operation of gas or smoke will be an advantage, reliance on such assistance will introduce another complication into the operations, since the moment of attack will be dependent on the occurrence of a favourable wind as well as on the general prevalence of dry weather.

MORE COMPLETE CLEARANCE OF OBSTACLES

44. In order to clear away the obstacles over a broad front for the subsequent advance of reinforcements, or a burst through of a mass of cavalry, experiments are being made in trawling along the entanglements laterally by pairs of machines connected by a wire hawser. This would be done after the assault had passed over the obstacle.

COMMAND AND CONTROL OF THE TANKS

45. The frontage of an attack by 100 Tanks would, as has been explained, extend to some 5 miles, so that the question of the control will have to be worked out with some care. It seems, as the Tanks are an auxiliary to the infantry, that they must be counted as infantry and in operation be under the same command.

February, 1916.

E. D. S.

We were waiting for the word "Go." All was in train. On Friday, the 11th February, things again began to move. After eight days the War Office received a request from France for forty machines. Considering the nature of the weapon and the way in which it was to be employed, this number was, to my mind, quite inadequate, and I suggested that it should be increased to at least 100. This was the number finally decided on.

The extent of the Army requirements was now known, but it was not so clear by whom they were to be met. This was not unnatural, since three departments had been mixed up in the business, and it was not fully realized at the War Office that the matter was one for the Ministry of Munitions, under which a special supply committee had been formed to deal with any demand for Tanks.¹ Having been largely responsible for the procedure, I was able to explain the situation, and, carrying on my role of *accoucheur*, drafted an official request from the Army Council to the Ministry of Munitions, asking for one hundred.

Meanwhile, those concerned with supply had not remained idle. Stern, as chairman designate of the

¹ Though the Ministry of Munitions representative had on the 24th December declined to be responsible for supply and the War Office had agreed to father the Tank Supply Committee, Mr. Lloyd George properly decided that the Tank Supply Committee should be part of the Ministry, which it became.

Tank Supply Committee, had been asked by Mr. Lloyd George to join the Ministry of Munitions, and at his request, and with expert advice, had drawn up a "charter" defining the powers of this committee and authorizing it to set in motion the machinery of production, as soon as a demand for Tanks should be received. He had also taken the precaution of warning the factories concerned to be prepared to start work upon the receipt of telegraphic orders.

Next day, Saturday, on hearing that the Army Council letter had been signed, I informed Stern, who, with d'Eyncourt, immediately came round to 2 Whitehall Gardens, bringing with him his charter for the Minister of Munitions to sign. Being the week-end, there was special need for hurry, and we at once called at Mr. Lloyd George's office next door. While the two others went in to obtain the signature which would vitalize everything and set the wheels going round I stayed on guard outside to ensure that the Minister, despite his well-known power of prompt decision, did not dart off without signing the document, which would have held up all immediate executive action. There was no need for any such precaution, for after a very few minutes Stern came out, waving a bit of paper, his face wreathed in smiles. Mr. Lloyd George, after reading the document, subject to one portion being approved by his Director of Finance, Mr. Hardman Lever,¹ initialled it without hesitation. The Tank Supply Committee now being a properly constituted executive body, orders were forthwith sent out to the manufacturers by telegraph and telephone.

The text of the charter ran as follows :

"The Minister of Munitions has had under consideration the report of the Interdepartmental Committee on the question of Tank Supply.

¹ Now Sir Samuel Hardman Lever, Bart., K.C.B.

The Minister considers that now the question of design has been settled and it has been decided to arrange for earliest possible supply of 100 Tanks, the matter becomes one of supply which falls within the province of the Ministry of Munitions to arrange.

As, however, the Admiralty Committee has carried out the whole of the Experimental Construction and is fully acquainted with the details necessary for the production of a large number of Tanks the Minister agrees with the First Lord that the Committee should now become a Committee attached to the Department of Minister of Munitions and should carry on the work and arrange for the manufacture of the machines required as an executive body working directly under the Minister of Munitions.

The composition of the Committee will be as shown on attached sheet, and the Admiralty has agreed to allow Admiralty members of the Committee to undertake these duties. Mr. d'Eyncourt, Director of Naval Construction, has consented to continue to superintend the technical and experimental work of the Committee.

The Minister accordingly authorizes the Committee to arrange manufacture of these machines, placing orders with contractors as necessary and corresponding direct with any Government Department concerned, also to incur any necessary expenditure in connexion with engagement and remuneration of inspecting or other staff, experimental work, travelling and other incidental expenses. The Committee shall have the final decision in all matters connected with the manufacture and inspection of these machines, and shall have full power to depute to any one of their number any specific duties concerned with the above, and also to add to their number if necessary. The Minister of Munitions will grant all facilities required by the Committee for supply of labour and material to the Contractors for the Tanks. All payments for this work shall be made solely on the certificate of the Committee which shall be accepted as full and sufficient authority by all

Departments concerned, and an imprest* of £50,000 is to be at once placed at the Committee's disposal for the experimental work.

D. L. G.
12/2/16."

* "I concur subject to the word 'imprest' being changed to 'authorization.'

SAM H. LEVER.
D. of F.
12/2/16."

* * * * *

In great matters a definite advance had now been made. A Tank had been designed, built, tried, and approved. The Army had asked for Tanks. The machinery for producing Tanks had actually been set in motion. But in the direction of creating an organization to man and fight them—in spite of the recommendation of the Conference of the 24th December—little, so far as I was aware, had been done.

In smaller matters this last fact once more changed the course of events for me.

* * * * *

Some three days later I happened to meet General Bird¹—the Director of Staff Duties—in one of the passages of the War Office. To my astonishment he informed me that the Army Council had selected me to raise and command the Tank Detachment, the new unit which was to be formed to man the Tanks. I was to be in charge of it at home, while in France it was to be under the local commanders.

I was genuinely surprised, for though I had been pushing this development almost since the beginning of the War I had had no thought of creating a post for myself. Indeed, the position I actually held was both important and congenial, and from a personal point of view I had no wish to change.

Upon a moment's reflection, however, I realized

¹ Now Major-General Sir Wilkinson D. Bird, K.B.E., C.B., D.S.O.

that it was not unnatural that I should have been nominated to continue the work with which I had been for so long associated. I was deeply sensible of the honour and much tempted at once to accept. But further consideration gave me pause. So far there had been little backing for the Tank scheme from the War Office, and I considered that it would be useless for me to attempt to raise the unit without whole-hearted support. It is true that I had been selected for the post, but this, I felt, was more because circumstances pointed to me as the obvious choice than by reason of any special confidence reposed in me. This led me to doubt continuity in my tenure of it. I had had experience of raising a force in the South African War, and knew how essential it was that there should be no change of command during the process. In the case of a unit of so novel a nature as the Tank Detachment it was, in the interests of the formation itself, specially to be deprecated. Much as the idea of raising the unit appealed to me, I could not but feel that it might be in the best interests of the corps if an officer were chosen who would carry sufficient weight at the War Office to be able to frustrate any attempt at replacement. Such influence, in my opinion, would in the long run outweigh any lack of previous experience, and for this ultimate good I would willingly have stood aside. I endeavoured to propound these hesitations, but the Director of Staff Duties was insistent. I therefore accepted the appointment, subject to the permission of the Prime Minister. I made two requests: the first—that as my duties would call for much improvisation I should be allowed a reasonably free hand; the second—that I should be given sufficient temporary rank to help to overcome the inertia I was likely to meet.

And so the matter was settled. Within a week I had gone back to soldiering. The ensuing eight months proved to be the most strenuous, stimulating, and trying period I have ever experienced.

[*March-April, 1916*]

ANOTHER turn of the kaleidoscope ! The alteration in my circumstances swiftly made itself felt. No longer did I speak from the shadow of the Mighty. Gone was the time when I could summon meetings between departments, pull strings, persuade others to "get a move on." I was just a temporary colonel commanding a mysterious new unit with a comic name. For me the change may have been both salutary and chastening. But to progress the loss of power was detrimental.

* * * * *

Since the 24th December, 1915, the Tank has always been known as such ; and there has been no confusion as to its nomenclature. But this was not the case with the branch of the Service of which it is the weapon ; and any account of the early stages of the latter is liable to be confusing, owing to the fact that between March, 1916, and the end of the War it successively bore five different names. When I was appointed to the command it was the Tank Detachment. The connexion between this title for the new formation and its weapon was obvious, and the name was almost at once dropped. The formation was then for a short time called the Armoured Car Section of the Motor Machine Gun Service, and at the beginning of May—to anticipate slightly—it was rechristened the Heavy Section, Machine Gun Corps, to which corps it was then affiliated. For the sake of simplicity it

will be here referred to by this last name, under which it was known as long as my association with it lasted.¹

Siberia Camp, Bisley, was selected as the birth-place of the new unit owing to the fact that it was the depot and central Training School of the Motor Machine Gun Service, another war-time unit which had been created towards the end of 1914, with the object of increasing the machine gun strength of the divisions by the addition of batteries of machine guns carried on side-cars. For various reasons the latter had not been found to come up to the original expectations of its utility, and its reduction had been decreed, thus rendering available a large number of good men of a suitable type for the new Heavy Section. The latter therefore, was provided with a ready-made nucleus in a number of officers, including Lieutenant-Colonel R. W. Bradley, D.S.O., of the South Wales Borderers, who commanded the M.M.G.S., and about 700 other ranks, already partly trained, who were transferred to it *en bloc* at the beginning of March.

The majority of the officers held temporary commissions, some being transferred from the Motor Machine Gun Service, some from France, a few from the Royal Naval Air Service, and a large number of cadets with engineering knowledge from the different officer cadet battalions then existing. In addition to the Regulars furnished by the M.M.G. Service, I succeeded with difficulty in securing one or two others, among them being Lieutenant-Colonel John Brough, C.M.G., of the Royal Marine Artillery. Brough was a Staff College graduate, which fact nearly prevented my getting him, as there was some reluctance to part with an officer with such qualifications. Consent was finally given. But at a time when every moment

¹ In November, 1916, it was once again renamed the Heavy Branch M.G.C., and in June, 1917, it became the Tank Corps, which title it retained until after the War, when it was created the Royal Tank Corps.

was precious it took me several days to get the appointment made.

The Company Commanders, each in charge of a company of twenty-five Tanks, were :—

- “ A ” Company, Major C. M. Tippetts (South Wales Borderers).
- “ B ” Company, Major T. R. McLellan (The Cameronianians).
- “ C ” Company, Major A. Holford-Walker, M.C. (Argyll and Sutherland Highlanders).
- “ D ” Company, Major F. Summers, D.S.C. (Armoured Car Division, R.N.A.S.).
- “ E ” Company, Major N. H. Nutt (Armoured Car Division, R.N.A.S.).
- “ F ” Company, Major W. F. R. Kyngdon (Royal Artillery).

The unit was fortunate as regards other ranks in being filled with men of a remarkably high class. All those transferred to it were of superior education, having motor or mechanical engineering experience. The majority of those recruited hailed from the Midlands and North of England and were selected and enlisted by the voluntary efforts of the Editor of *The Motor Cycle*—Mr. Geoffrey Smith, of Coventry, who had since 1914 devoted his time, his energies, and the publicity resources of his paper to obtaining recruits for the Army from the motor-engineering trades. In March, 1916, when the Heavy Section was started, there were still available men of this stamp, who were attracted by the prospect of serving with a technical unit, whether it was called the Armoured Car Section of the M.M.G.S. or the Heavy Section of the M.G.C. Mr. Smith continued to enlist men for us until June, 1916, when our establishment was complete, and his help was invaluable.

In one attempt to obtain recruits I met with an unexpected rebuff. Some of my officers who had

served in Gallipoli with the Armoured Car Division, R.N.A.S., thought that many of the rank and file of that Service who had returned to England would like to join the Heavy Section. I therefore went down early one morning to the depot and addressed the men on parade. Without explaining exactly what the Heavy Section was, I stated the conditions of service, pay, etc., and referred to the prospect of its soon being in the thick of things. Having, as I thought, depicted its attractions in glowing terms, I suggested that some of the more adventurous spirits might like to transfer. I did not know the naval words of command; but I had learned the word "rating." To avoid confusion in the expected ugly rush of stalwart volunteers, I called the parade to attention as if hailing the main-top, and rasped out: "Ratings wishing to transfer to the Heavy Section, Machine Gun Corps, one pace forward—march!"

The front rank swayed, seemed to lean backwards—so rigid it was—and—not a man moved!

The explanation was simple. These men were being paid by the Admiralty about three times the amount they would have received on transfer to the Army!

As later on, after I had handed over, there was some loose talk by outsiders of a lack of discipline in the Heavy Section, I take the opportunity to state here that there was absolutely no justification for it. Such a criticism could have been made only by those who did not know the unit, or who had a false idea of discipline. All ranks may have lacked the external smartness of guardsmen or of long-service regular soldiers. But, judged by that higher standard, which is denoted by the absence of crime and the efficient performance of duties calling for more initiative, knowledge and skill than precision in parade movements, they did not fail. Their qualifications as regards education, intelligence, and capacity for learning may be gauged by the fact that in less than five

months, every N.C.O. and private, in addition to some elementary military work, had to learn to handle the 6-pr. Q.F. gun, two different types of machine gun, and to drive a complicated and entirely novel type of motor. Each was a combination of infantry soldier, gunner, machine gunner, motor mechanic, and trick lorry-driver. If the varied nature of the curriculum and the short time devoted to it be compared with what was expected from the men of any branch of the Regular Army before the War, or of the New Armies, the quality of the rank and file of the Heavy Section will be appreciated.

* * * * *

It was intended, as would have been natural in normal circumstances, that I should make my headquarters at Bisley, with the unit I was commanding. But when I realized the number and variety of the points to be discussed and settled for this new and unprecedented organization, I found it essential that I should be in London, in close touch with the War Office, the Ministry of Munitions, the Tank Supply Committee, and all sorts of bodies and people with whom I had continually to be dealing. I therefore delegated the personal charge of the training centre to my second-in-command, Colonel Bradley, who, until the Tanks actually appeared on the scene, except for the training in 6-pr. gunnery, had merely to carry on—with many of the same staff—what he had been doing for several months.

One of the first things to be arranged was that commissions in the Heavy Section should be given to some of those who had already been so prominent in the work of design and supply, with a view to their future administrative rather than regimental duties. Lieutenants Stern, R.N.V.R. and W. Wilson, R.N., were both transferred to the Army, with the rank of Major in the Heavy Section, and certain others were

transferred with lesser rank. I received the temporary rank of Colonel.

Stern, as Chairman of the Tank Supply Committee, was now an official of the Ministry of Munitions. Without waste of time he succeeded—largely by bluff and a display of determination, backed up by his charter—in “appropriating,” as he puts it in his book, two rooms in Armaments Building—known in peacetime as the Hotel Metropole—in which to carry on the work of his committee. As for myself, I naturally could not retain my room in the War Committee Secretariat for more than a few days. Since the necessity for my presence in London was appreciated by the General Staff as lightly as was the multifarious nature of my duties—I was unable to get an office allotted to me at the War Office. In this dilemma I had the happy thought of riding into Armaments Building on the back of Stern, who kindly gave me one of his two rooms on the fifth floor and half a stenographer! Here, with my clerk and “orderly-room sergeant,” I quietly—very quietly—established myself. And so large was this new Ministry already, and so fluid and expanding its population, that my intrusion was not noticed, and there I remained. And so it happened that for months I occupied a niche in a Government Department to which I did not belong. The War Office, which now accepted the gift of the Tanks, did not even furnish house-room for the headquarters of their organization.

Life on the fifth floor had its lighter side. A certain official of the Ministry—whose office was near mine—used to tell a malicious but amusing story when he wished to insult my profession. One day, according to him, there was a knock at his door, and in doddered an aged brigadier, obviously a dug-out, and, from the fact that he was puffing and blowing, presumably afraid of using any such newfangled contrivance as a lift.

"Mr. Blank?" he stammered, between gasps for breath.

"Yes, sir," said the occupant of the room, politely standing to attention—he was a temporary officer.

"May I take a chair? Lot of stairs! Rather short of breath," panted the visitor.

"Certainly, sir," and the chair was proffered. After two minutes, Mr. Blank, who was extremely busy, coughed inquiringly.

"Mr. Blank?" again wheezed the visitor, who had forgotten his first question.

"Yes, sir," repeated the thoroughly impatient man of "push and go," pep oozing out of him.

"May I ring up my own office?"

"Certainly, sir. Here's the 'phone."

After some fumbling and an attempt to speak down the earpiece of the instrument, the General finally got through to his own room at the War Office. "Is that you, Dilly?" Pause. "What did you say?" Another pause. "Oh, er—er—Dilly, can you tell me what I've come to see Mr. Blank about?"

* * * * *

Perched in my eyrie, with continual visits to the War Office and other departments and frequent excursions away from London, I found life a species of hectic nightmare of varying interests and activities. The telephone was incessantly in use, and after two months I got an attack of laryngitis and entirely lost my voice. To give a strictly chronological record of what happened during the next eight months would be impossible. So much was going on concurrently that I propose to deal separately with some only of the more important aspects of the work during this period.

At that time only one Tank existed; the production of 100 others had been started, and a nucleus of the officers and men required to man that number,

all serving soldiers who had already been partly trained, was collected at Bisley. It was at first intended that the Heavy Section should have a company organization, but this was changed to one of three battalions of five companies each. The war establishment had been framed and all preliminary training begun on these lines, when the arrangement was revised at the wish of G.H.Q., which was opposed to a battalion formation. The organization was therefore altered to one of six companies of twenty-five Tanks each.¹

It will be remembered that my original conception of a Tank was a machine-gun destroyer. It was for this reason that "Mother" had been provided with 6-pr. guns and that the whole of the Tanks on order were to have the same armament. But, excellent as this might be for its special purpose, after considerable thought as to the powers of self-defence of a machine so armed, I came to the conclusion that with its two 6-prs. and three Hotchkiss machine guns, it would have great difficulty in protecting itself against a rush of large numbers, for against men 6-prs. are practically useless. Some more wholesale close-range man-killing weapon was requisite. I proposed, therefore, that each "destroyer" Tank should for its protection be accompanied by a consort, or "man-killing" Tank, armed with four Vickers machine guns, which would enable it to fire at the maximum rate of 1,200 bullets a minute from each side. The simplest way would have been to order another hundred Tanks as consorts to the hundred being made; but it was decided to limit the total to 150 machines. The supply of engines was a source of difficulty. Mr. Lloyd George, however, on our representation, at once promised that the additional number should be forthcoming. The increase in the total of Tanks was finally

¹ In November, 1916, after I had handed over, G.H.Q. reintroduced the battalion organization.

approved in the first week in April, when the strength of the Heavy Section was fixed at 150 machines, 75 being "destroyers" with 6-pr. guns, and 75 "consorts" carrying only machine guns. The latter involved a certain amount of redesigning. I dubbed these two types "male" and "female" respectively, short and familiar words which gave nothing away and, being based on a biological analogy, were unlikely to be forgotten.

It was also on account of the uselessness of common shell for man-killing that I proposed that the guns should be supplied with case-shot.¹ As the possibility of case being fired by this gun had never been contemplated, there was none in existence, and a special design for it had to be got out. This was under preparation when the project was negated by the General Staff.

After several months the necessity for case-shot was admitted, and it was introduced.

But in conjunction with the changes in the strength of the new organization, one of the first things which had to be settled was its war establishment. This is a complete and detailed tabular statement of every man, animal, and vehicle required by a unit to take the field. It is the authority and scale upon which pay, equipment, rations, and supplies of every sort are issued. It is in short a charter, without which a unit theoretically does not exist. When we began to frame this for the Heavy Section we had no data to work upon beyond the fact that there were to be a hundred Tanks, each carrying a crew of one officer and seven other ranks. As may be imagined, there

¹ Case-shot consists of a thin metal cylinder containing a number of metal balls. As the shot leaves the muzzle of the gun the case breaks up and releases the balls, which travel on in a shower for a short distance. Case is akin to the canister and grape-shot of old days, which was fired at short range against masses. Hence the expression "a whiff of grape-shot."

was far more to be legislated for than could be arranged by mere multiplication. We were not dealing with any orthodox formation of a "sealed pattern," such as an infantry battalion, a cavalry regiment, or a battery, and most of the requirements had to be guessed. There were no precedents to follow; and one of our great difficulties was to convince many of the officials that the Heavy Section was totally unlike any formation familiar to them. With the aid of arithmetic and some imagination, we did our best with the first edition of this establishment, which naturally was far from complete and was under continual revision. As we progressed, fresh wants and requirements were continually being discovered, with the result that it was not until the end of May that the establishment was finally fixed at six companies of 25 Tanks each, totalling 75 male and 75 female Tanks. There were also the Headquarters and a Park Company. The total personnel at first amounted to 184 officers and 1,610 other ranks. This remained the formation of the Heavy Section as long as I was in command.¹

To maintain this mass of machinery in the field it was necessary to provide mobile workshops—special motor-lorries equipped with power plant and the particular tools requisite to carry out running repairs. Three such workshops were to be furnished. I had instructions to draw up a combined specification and establishment for them—the view of many members of the General Staff, themselves entirely non-technical, still being that engineering was a simple profession and that every man who called himself an engineer of any kind must know all about the whole subject. As such work was in any event a matter for a mechanical engineer—which I was not—and in this case for a

¹ The "transport" in addition to 150 Tanks, included 11 motor-cars, 99 bicycles, and 27 motor-cycles. From this it may be gathered how much the Heavy Section differed from anything else existing.

caterpillar track specialist—which I was still less—I declined to waste time by making any attempt to do this myself.

There were not many engineers in England who had experience of track propulsion ; but, knowing of two then serving in France, I applied to the Director of Transport at G.H.Q. for the services of one of them. In response, he sent over Major H. Knothe,¹ of the Mechanical Transport Branch of the Royal Army Service Corps, a mechanical engineer in civil life, who had been in charge of Holt Caterpillar Tractors used for the haulage of artillery. After explaining the situation to Knothe and what was required, I sent him to Lincoln, where "Mother" lay dismantled, with orders to live, eat, and sleep with her until he knew her inside out, and then, when he was ready, to work out in full detail what he considered necessary for workshops. This he did.

Whilst I was thus taking steps to obtain a practicable specification drawn up by an expert, I happened one day to look into a room at the War Office, where I frequently called, and found there a Gunner officer on the General Staff whom I had not seen since we had been cadets together. I inquired what he was doing.

"Trying to draw up an establishment for your comic unit," he replied.

"Establishment for what?" I said.

"Workshops."

"The devil you are! How are you doing it?"

"Making it up from this," he answered, pointing to the workshop establishment of an organization of an entirely different nature.

"Oh," I continued. "Are you a Tank engineer?"

"No."

"Are you a caterpillar tractor engineer?"

"No."

¹ Now Lieutenant-Colonel H. Knothe, D.S.O., M.C., late R.A.S.C.

" A motor engineer ? "

" No."

" A mechanical engineer ? "

" Naow ! "

" Are you any sort of blank engineer at all ? "

" Naaow ! ! "

" Then what on earth are you wasting your time for like this ? "

" Because I was ordered to."

And if I had not concurrently taken other independent measures more irrecoverable time would have been lost in awaiting and then correcting the result of this officer's wasted labours.

What followed is even more incredible. It might be imagined that when the specially imported technical expert had completed his specification, sanction would have been given for the workshops to be supplied. But it was thought necessary, at this moment, when time was so important and France was pressing for Tanks, to refer this question to G.H.Q., where there was no one so well qualified to express an opinion on the subject. After several days back came the approval; with the sapient suggestion that possibly two 4½-inch lathes might be substituted for one 9-inch lathe—which is equivalent to asking whether two No. " 7 " collars would not serve as well as one No. " 14 " !

* * * * *

During March, April and May, and until early in June, when recruiting was stopped, men continued to come in. Ordinary military training and that in gunnery and the two types of machine gun went on without pause. Instruction in the driving, fighting and maintenance of Tanks had necessarily to be deferred until such time as we received the machines.

During the whole period of its formation the Heavy Section had cause to bless the existence of the Tank



ORIGINAL LEATHER CRASH-HELMET WORN BY THE HEAVY SECTION
ON FIRST GOING INTO ACTION, SEPTEMBER, 1916

Supply Committee. Through that body we could call upon two Government Departments in addition to our legitimate parent—the War Office. In all matters appertaining to personnel, pay, food, equipment, clothing, housing, we were—like the other units of the Army—under the War Office, which theoretically was also responsible for our armament, though, in fact, it furnished us with machine guns only. Under it nominally were also carried out the experiments in, and production of, our wireless equipment. The Tank Supply Committee, as part of the Ministry of Munitions, provided the Tanks complete with fittings. These included experimental and all other extra equipment and gadgets, as the necessity for them appeared, such as clocks, dummy rocking tanks, dummy observation balloons, etc. The efficiency of this organization in producing whatever was demanded was amazing. Its chairman boasted, not without reason, that any telephonic demand made on the committee was complied with before the individual making it had rung off. To us, having to deal in so many unusual and improvised requirements, it was an Aladdin's lamp.

Lastly, the erstwhile association of the Navy with the original Tank continued to exert a beneficent influence. The Admiralty, which had officially terminated its responsibility for, and connexion with, the Tanks so soon as "Mother" had been taken over by the Ministry of Munitions, remained our Fairy Godmother for some time, the Naval Ordnance Department, under Admiral Singer,¹ never failing to help us when called upon. This help was particularly valuable in regard to our primary armament.

The reasons for the adoption of the 6-pr. Q.F. Hotchkiss gun—which was a naval piece—have already been given. It has also been narrated that the Admiralty had promised to furnish these weapons,

¹ Now Admiral Sir Morgan Singer, K.C.B., K.C.V.O.

together with ammunition,¹ since the Army could spare none. The guns were single-tube shortened pieces of a simplified design. The actual number which could be supplied was one hundred. This offer was gratefully accepted, an order for the additional pieces required being placed with the armament firms.

And so, having helped the Army from the beginning with finance, personnel, and, later, experimental development, the Navy again had come to its aid with armament. Had it not been for its broadminded co-operation at this stage the Heavy Section would have had no guns until much later than was actually the case, and no male Tanks could have taken the field in September, 1916. Whether, in the long run, this might not have been a blessing in disguise is another matter.

But, though the question of the future supply of guns was thus happily arranged, there still remained the urgent immediate need for a few for training purposes. The two carried by "Mother" were at once dismounted and sent to Bisley. Then I remembered that in my last tour of duty at the Royal Military Academy, dating back some seven years, there had been one such gun in the instructional coast battery at that place. I knew the Commandant. I ascertained by telephone that the gun was still there, and was not being used. I sent an S.O.S. call for transport to No. 20 Squadron R.N.A.S.² And next day that gun was in our camp at Bisley. Borrowed for a few days, it stayed for months. War-time is a bad time to lend! It was less easy to find a gunnery instructor, for the 6-pr. was a coast-defence weapon familiar to the Garrison Artillery alone. However, the War Office succeeded in providing an officer who had the

¹ The first lot of ammunition supplied for the Tanks had, I believe, been made for the Japanese and was shipped back to this country.

² Our connexion with this naval unit, which had its own motor-lorries, enabled us to short-circuit many problems of transport.

necessary qualifications. And so, in the most primitive way, with our three guns—one practically stolen goods—mounted on logs sunk upright in the ground, we early started preliminary training in the gentle art of knocking out German machine guns.

So far so good. But this was not enough. Practice in actual shooting was essential; and my first effort to provide it was a grim fiasco. War is war, and as Bisley was a rifle range it seemed to me that by stretching the Musketry Regulations we might in such an emergency also use it for firing unfilled shell. With this in view, I took the competent authority from the War Office down to Bisley, gave him lunch, got him to inspect the hills near by, and obtained his sanction to commence shooting. After the first day's practice I received an urgent message from the War Office ordering me at once to stop artillery practice at that place, and inquiring by what authority I had started it. It appeared that a husbandman ploughing his furrow along the hillside had been frightened nearly out of his life—not unnaturally—by the fall close to him of one or two shells, which were still hot when he tried to pick them up. As the officer who had given permission for the use of the place showed no sign of claiming his share of the responsibility for this crime of shooting to the public danger on an unauthorized range, I accepted it myself, excusing my action on the grounds of there "being a war on" and the urgent necessity for practice. That was simple. But it did not help us towards shooting.

Once again we were baffled. Once again the Navy lent a hand. With the consent of the Admiralty I went down to Portsmouth to see whether the Naval Gunnery School on Whale Island could help us. The Commandant at once offered to give a short course in target practice to as many men as could be sent down, and also to put them up in barracks, which offer I

equally promptly accepted. Again, so far so good. This all helped to make the men handy with their weapon ; but shooting over water was not quite the right practice for the crews of the Tanks, which, though originally called landships, were not amphibious.¹ It was therefore arranged that their gunnery course should be completed by practice under the Royal Artillery at Lark Hill on Salisbury Plain. All this was complicated, and entailed waste of time in travelling, for every gunner had to visit three places. And it did not end there, as shooting from Tanks on the move had yet to be practised. For this, however, in the spirit of the immortal story, we 'ad first to catch our Tanks.

Half-way through April I saw Sir Douglas Haig in London. He was much interested in what was being done and told me that he had read my memorandum of February, with which he entirely agreed. His mind was occupied with the coming offensive on the Somme ; and he was anxious, if possible, to get some machines over to France by the 1st June. He asked whether it could be done. My answer was that no Tanks could be sent to France by that date, or even by the 1st July, but that there was just a possibility that some might be shipped by the 1st August, and that, if sufficient were delivered during July, the crews for seventy-five might be trained by August. Towards the end of May I had a talk with the Chief of Staff of the B.E.F., General Kiggell,² who was also in London. He was as anxious as the Commander-in-Chief to ascertain when they would have Tanks in France, but I could tell him nothing more encouraging than I had told his chief. He, too, informed me that he had read my memorandum and agreed with it. I was much relieved that the two senior officers in France were

¹ At Passchendaele in 1917 they were asked to perform in seas of mud.

² Now Lieutenant-General Sir Lancelot Kiggell, K.C.B., K.C.M.G.

in accord with my ideas. It implied that they approved the policy of not employing the Tanks in dribblets, a point which I had emphasized.

* * * * *

Hankey now took a hand in thinking out the combined tactics of the future Tank battle. I had specified the enemy guns as being the chief danger and had stressed the necessity for attacking the latter with our own artillery and bombs from the air. Hankey further elaborated the combination of air and Tank action, suggesting that the "Caterpillars" should be assisted by what he called "Grasshoppers," namely, a number of aeroplanes—either surplus machines, or those unsuitable for other purposes. These, fitted with bullet-proof plate under the pilot's seat, were to start with the Tanks and, flying quite low, the better to escape the enemy's anti-aircraft weapons, make straight for the German artillery with machine gun and bomb.

I was in entire agreement with this scheme—if aeroplanes were available—for it was no more than a reinforcement of my own. Not only would it increase the expectation of life of the Tanks, but it would add to the chances of bewildering the foe. The suggestion was submitted to General Sir David Henderson, then commanding the Royal Flying Corps, but it was not considered feasible.¹

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¹ The "strafing" of enemy troops during an attack by machine-gun fire from low-flying aeroplanes was carried out by individuals during the Somme battles of 1916. In 1917 it was done on a larger scale. As a definite, organized, and integral part of co-operation with infantry it was employed by the Germans on the 30th November, 1917, in their counter-attack at Cambrai, in a form which was a distinct advance on anything that had hitherto been attempted by either side.

The co-operation of aeroplanes with Tanks up to and during the Battle of Amiens, August, 1918, was confined chiefly to that

From Siberia the partly-formed Heavy Section moved to Bull House Camp close by, where it was under canvas. Here it still had the great advantage of the Bisley ranges for its musketry and machine gun work, and yet it was self-contained and separate from its parent—the M.M.G.C. Bull House, being very central, would have been an admirable place for the entire training of the unit but for two objections: the first, that there was no artillery range anywhere near; the second, that it would have been impossible to keep the secret of the Tanks once they were brought to this place, which was in the centre of a populous district, with fairly large towns on all sides. Whilst, therefore, the non-secret training could be carried out there very conveniently, it was imperative also to secure some more secluded spot where a private training ground could be established without exciting too much comment or curiosity. The difficulty was to find it; and the responsibility for doing so lay with me. It was inadvisable to make inquiries in too many quarters, and exploration had to be conducted by some individual—preferably an Engineer officer. I myself had not the time to chase across the Midlands and South of England.

By good fortune I found the very man for this work in Major M. O'C. Tandy, R.E.,¹ of the Survey of India, who was at home wounded, but fit for light duty. Having obtained the loan of his services temporarily from the War Office, I sent him forth—like the dove from the Ark—to seek out a likely Ararat where the Heavy Section might rest. My instructions to him were to go where he thought fit, by any means

of contact and counter-attack patrols. It was found during that fighting that our Tanks suffered severely from the German field guns, and for the next battle—that of Bapaume, August–September, 1918—counter-gun work was adopted as a special feature of aeroplane co-operation.

¹ Now Colonel M. O'C. Tandy, D.S.O., O.B.E. (late R.E.).

he found most suitable, rail, motor, or air, but not to return until he had found what he was looking for. I would foot the bill. It was no time to haggle about expense. Speed was everything, and so long as we got the ground in time the question of finance could be fought about later on if necessary. No fight was, in fact, called for. Tandy and I together inspected the country round Aldershot and Alton, and he then continued his explorations to the New Forest, Salisbury Plain, and still farther afield, without finding what was required.

In the first week in April I received a telegram from him from Thetford, in Norfolk, to say that he had found the ideal place, a remote yet accessible spot in the midst of a practically deserted countryside. As I was just about to set off on a tour to obtain officers from the Cadet Battalions of the Officers' Training Corps, I arranged to go to Thetford on my way. How lucky I was in obtaining the services of a survey officer was proved by the manner in which Elveden was discovered. Having visited the obvious places, Tandy had consulted the Mapping Section of the War Office, and was advised to try the country of big "shoots" in Norfolk and Suffolk. After a careful preliminary inspection of contours, etc., on the large-scale maps at the War Office, he had come to the conclusion that the most likely area in every way was that to be found near Thetford, and had straightway set out for that place.

I started my pilgrimage by inspecting at Chelsea Barracks a number of cadets of the type required, namely, with some mechanical knowledge. Of these I selected about thirty for commissions. With Bradley I drove down to Oxford that afternoon, and next morning chose about fifty more cadets with similar qualifications. We then went on to Cambridge, where we made a "bag" of about the same size. It was a strange sight to see both these University towns and

the Colleges swarming with khaki. We spent that night at Thetford, with the General Officer commanding the 69th [East Anglian] Division,¹ who had been let into our secret, and who gave us every possible assistance. On the following morning he drove with us all round the area discovered by Tandy, which was near Elveden and stretched across parts of the shooting estates of Lord Iveagh, Lord Cadogan, and the Duke of Grafton. This ground, about fifteen square miles in extent, with a sandy soil, having large patches of arable and stretches of heath and many rides, screens and trees, appeared in every way admirable for our purpose. I made up my mind to apply for it to be taken over at once, and on my return to London I did so.

"Nip and tuck" being the order of the day, I called on the Lands Branch at the War Office. The official I saw was Mr. Driver Jonas, a member of the firm of that name. With me came Tandy, a roll of 6-inch ordnance maps under his arm. I explained what was wanted. Mr. Jonas took it quite calmly and said: "Right. What authority have you?"

"Army Council," I replied promptly.

This, though not literally correct, was true in spirit, for I had to raise the Heavy Section, and it had been left to me to find a ground somewhere.

"Right," said he. "Have you a map showing the exact area you want?"

I waved forward "my Major Tandy". He spread out his maps and exhibited the area nicely marked in red; and there was a little chat as from surveyor to surveyor—between the man who thought in triangulations and thousands of square miles and the man who thought in acres, rods, poles and perches.

"I am afraid that there are a few inhabitants who will have to be removed," I muttered. This, I thought, was a poser.

¹ Major-General F. H. Kelly, C.B., C.M.G. (late R.E.).

"Right," repeated Mr. Jonas, unruffled. "When do you want to take possession?"

"Not for ten days," I replied, as the troops required to prepare the ground could not be collected sooner.

"Right," said Mr. Jonas once again. "If you'll let me have a copy of the map, I will go down to-morrow or next day, see the place, arrange for compensation, etc., and you will be able to take over within a week."

Both Tandy and I were staggered, but did our best to conceal our pleased surprise. Such celerity was unheard-of.

"But what do I do next?" I asked.

"Nothing. Leave it to me, and I will let you know when everything is fixed."

"Mr. Jonas," I said, "we think ourselves live wires in the Heavy Section, but you're the liveliest I've ever met. I'll give you a piece of advice. You are a civilian now. Remain so. You can enter a room in this building, say what you think and get attention. In your own line you are an expert. What you say goes. But once you put on uniform—you'll be only a junior officer—you'll have to stand up to attention while your seniors in rank sit down and tell you how to run your own show. Take my advice and don't take a commission."

"Thank you, Colonel," he said. "I'll try not to."

"Right," I was able to say myself at last. "*Don't* do it."

He was successful in avoiding this step for several months; but at last was obliged to accept a commission, and, like Samson, was at once shorn of his strength.

The Lands Branch of the War Office was as good as its word. Acting with commendable dispatch, it took steps to acquire the ground we needed. As soon as I knew this was in train, as a matter of courtesy I telephoned to explain to Lord Iveagh what was

going to happen. It did not take long to discover that Elveden was the apple of his eye, and I could not in honesty pretend that what I proposed to do there would not spoil his shoot. At first, as may be imagined, he was not pleased at the news; but he accepted the situation with a good grace and did everything in his power to help us. His view was that if anybody's shoot had to be spoilt, it might as well be his.¹

It was not long before the new home of the Heavy Section was awaiting it, ungarnished, it is true, but swept of its occupants.

¹ A considerable portion of the area at Elveden was, in fact, reduced to a passable imitation of a section of our front in France. It was restored later on, when all need for it had ceased, by German prisoners.

"With Care to Petrograd"

[April-June, 1916]

BY the end of April our establishment had been practically fixed ; preliminary training of the personnel was in full swing at Bull House, Whale Island and Salisbury Plain ; the production of Tanks was being pressed on at Lincoln, Birmingham, Sheffield, Glasgow and at the many other places contributing their part to the complete machines ; and a suitable ground for the special training of the Heavy Section had been found.

At Elveden no arrangements for living-accommodation were needed, there being sufficient suitable buildings for the headquarters, offices, and Mess, while the companies would be under canvas. What remained to be done was to "garnish" this ground, namely, provide a guard and prepare the area for purposes of training. Progress in all directions had to be synchronized, for there was no object in bringing the personnel to Suffolk if the place was not ready, or if there were no Tanks ; and, conversely, it would be discouraging for the workers in the factories if, after all their efforts, there were no men waiting to take over the machines as they were delivered. Things to some extent moved in a vicious circle. The controlling factor was the still somewhat nebulous date at which we could expect the first Tanks. This was about half-way through June ; and all our efforts were directed to being ready by then.

First, precautions had to be taken to maintain secrecy. The few inhabitants having been removed, all the roads leading into the area were blocked; and it was publicly called "The Elveden Explosives Area." A force of some 450 men of the Royal Defence Corps was employed for guard duties.¹ It furnished over a hundred sentries, who were on duty, day and night, at points all round the outer boundary of the area, across which no person was allowed to pass without a permit. Inside this was an inner boundary, within which work was carried on. The troops on guard had a monotonous task, being on continual tours of "sentry go" for weeks on end, in a strange, depopulated country, protecting a piece of land for an object of which they were ignorant.

Numerous rumours about what was going on were current locally. One was that a tunnel was being bored right through to Germany, another that experiments were being conducted with some new and terrible explosive, and so forth. They were not discouraged, since any explanation, provided it were not the right one, was better than unsatisfied curiosity.

When the Tanks were ready for delivery, they were to travel, carefully concealed under large tarpaulins, by rail from Lincoln and Birmingham direct to Barnham, a wayside station, on a branch line running near to the east side of the Explosives Area, and then on to a siding within the area, where they would be off-loaded after dark. The construction of this private siding would in ordinary times have been hedged about with all sorts of restrictions. An official of the Board of Trade estimated that if the usual regulations were complied with it would be six weeks before it was built. But by approaching the war-time central authority—the Railway Executive Council—red tape was cut through, ordinary procedure short-circuited,

¹ The Royal Defence Corps was composed of men who from age or other reasons were unable to go overseas.

and the work carried out by the engineering department of the Great Eastern Railway, assisted by the troops on the spot, in about a week. The siding was ready a few days before the first Tank turned up. It was approximately seven hundred feet long, with a side platform and a ramp at the end, suitable for the loading and off-loading of the Tanks, which could crawl on and off a train under their own motor power.

The locality was well chosen. In a more thickly populated neighbourhood the fact that something unusual was going on could not have been concealed, for on many nights the white glare of acetylene shone up into the sky and the air quivered with the hum of engines and the throb of exhausts. As such a scene of nocturnal activity must have been sufficiently conspicuous to attract the attention of any hostile aircraft within miles, arrangements were made for raid warnings to be passed on from the adjacent aerodrome to our headquarters, whence they would be telephoned to the different camps and to the railway siding. Here the alarm would be given by whistle, the Heavy Section being blessed with neither bugles nor trumpets.

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Meanwhile measures had to be taken to "dress up" the area for training—in other words, to provide a battlefield. For this purpose G.H.Q. France sent over an Engineer officer—Captain Martel, R.E.,¹ who had special experience of the conditions on the Western Front; and to assist in supervision, the War Office loaned four young R.E. officers, who were waiting to go overseas with reinforcements. And thus it happened that in spite of the refusal to allow the Heavy Section to be raised as part of the Corps of Royal Engineers—which logically it should have been—there were now seven members of that Corps fortuitously associated in its formation. Martel designed a portion

¹ Now Lieutenant-Colonel G. Le Q. Martel, D.S.O., M.C., R.E.

of the battlefield with specially broad and deep trenches similar to those used by the Germans on the Somme front, which he had himself more than once raided and explored. With the labour, at first of two, then of three, battalions of Pioneers of the Home Defence Force, which dug and wired strenuously for some six weeks, an accurate representation of a sector of the German Front was constructed.

The model battlefield was over one and a half miles in width. In depth it included the British support and front lines, No Man's Land, the German first, support, second and third lines. It was as complete a copy of the real thing as time, experience, labour, and money could make it. It comprised breast-works, wire entanglements, abatis, shell-craters, communication trenches, dug-outs, machine-gun emplacements and "nests," magazines, grenade stores, in fact every sort of work, which, according to the latest information, might be met with in the defensive zone. The various posts behind the enemy front line were marked by notices in German, and the men were instructed in their meaning. To gain experience in the climbing power of Tanks under conditions such as they would have to meet, the shell craters were made by exploding mines, since soil is shattered by explosive in a way which cannot be imitated by the shovel. The firing of these charges served a double purpose, for it also lent colour to the name by which the area was publicly known.

When the Pioneers had completed their task, over which they took an infinity of pains, they folded their tents and silently stole back to their various stations in England and Wales. The first Tanks actually appeared on the scene before they had gone, but were segregated in another part of the ground, and the men, it was hoped, departed as ignorant as when they arrived of the object of all their labour. But this did not deter them from doing a magnificent

piece of work in a remarkably short time. Perhaps when they, as well as the troops on guard, who remained at Elveden for three months longer, learned of the appearance of the Tanks on the Somme, and of their subsequent achievements, it was borne in on them that they also served who only dug and watched.

The question of providing water for the large number of men who were shortly to be congregated in the area caused serious thought, for the existing source of supply was some miles away. The solution laid down by the General Staff in London was that water should be conveyed into the camp by lorry. But in the opinion of Tandy, who was on the spot and had been responsible for organizing the battlefield, this would have necessitated an amount of traffic which the country roads could not have stood. He telegraphed that it was out of the question, and that the simplest way to get water, which was to be found at a known depth, was to sink an artesian well, for which there was sufficient time; that there was a contractor in the neighbourhood who had just completed a contract and would undertake the work for £500, but that if this was to be done, an immediate reply was necessary, as, if not needed, he was leaving that afternoon with all his gear for some other part of England. Before I could depart from the decision already given, I had to refer to the General Staff. But it was a Saturday morning and the officer concerned in the question was not available. The matter did not brook of delay, so I took the bull by the horns and wired to Tandy to give the contractor the job. I got a chiding, but before the advance party of the Heavy Section turned up, an ample supply of water was available.

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The precautions taken to secure secrecy at Elveden itself were directed against the curiosity of the general

public. But on joining the Heavy Section, the officers and other ranks, with very few exceptions, had received only the vaguest information about it, though it was not concealed from them when at Bisley that the unit was intended to be in the nature of a surprise to the enemy. Some of the men, however, who had enlisted for the "Armoured Car Section" became restive when they were put through strenuous courses of physical drill, gunnery and machine gunnery, but saw no signs of any cars. In order to reassure them I addressed the whole of the Heavy Section on parade and promised that the real purpose of the unit would very shortly be divulged. Meanwhile, though the rank and file had still to remain in ignorance, the officers were let into the secret. On Sunday, 28th May, we all met after luncheon in a small orchard outside the Mess at Bull House. Everyone sat on the grass, pipe in mouth, under the cherry-trees, which were in full blossom. After a warning as to the secrecy of what I was about to say, I explained the whole scheme and object of the Tanks, and read out my printed memorandum, of which I passed round copies. The stress I laid on the fact that the Heavy Section was being created to save the infantry naturally aroused special interest among those who as infantry had already had experience of the enemy machine guns.

It was possible only in the early stages to conceal from the hundreds of men engaged in the production of the Tanks the nature of what they were making. Reports were deliberately spread that the machines were water-carriers for our troops in Palestine, snow-ploughs for the Russian Army, etc., but when it came to making loop-holes, shell-racks and other things of the kind, these fictions could not be kept up. Still further to mislead, the Tanks were numbered from 700 and not from 1, and the legend "WITH CARE TO PETROGRAD" was painted in Russian letters

twelve inches high on both sides of each machine. Few people could read Russian, but they could all ask questions!

The manner in which the secret of the machines was kept reflects the greatest credit on all those who were in any way concerned with their creation. It was one of the most remarkable exhibitions of patriotic restraint in the whole course of the War. Thousands of men knew about the new Arm before it appeared in the field. But I heard of few instances of confidence being betrayed. A report reached the War Office that there had been too much talk in the works at Lincoln. I therefore went down there and expatiated to the men upon the danger of the secret getting out. One or two persons employed at Birmingham found to be aliens were interned.

I had personal knowledge of two cases of a breach of confidence. On one occasion a charming lady, my neighbour at a luncheon-party, on hearing my name began artlessly to ply me with questions, which showed that someone had been talking unwisely. I remembered that a certain young officer in the Heavy Section bore her name, and made a shrewd guess as to their relationship. Very seriously, and in a low tone, I told her that there was only one person from whom she could have learned what she knew; that if it got out it would not only mean his death, but the death of many others, and possibly the loss of the War; that unless she promised to maintain silence, except to contradict anything she had already divulged, I would order that individual's arrest by telephone and have him tried by court-martial for treachery—the penalty for which was death. Greatly upset, the lady vowed that she would carry out my instructions. She had no thought of doing any harm, but like many others, did not realize the danger of chattering.

The other case was similar. We heard that a

certain actress at one of the London theatres had got wind of something from an officer and was talking indiscreetly. Accordingly, Stern and I visited her in her dressing-room one night after the play, with much the same result as I have just described. In this case I am afraid I bluffed in threatening her informant with death, for we had no idea of his identity, but she was sufficiently frightened to promise to do all that I demanded.

There is one persistent myth of which I think I can dispose—that of the secret having been wormed out of some member of the Heavy Section and betrayed to the Germans by the so-called Javanese dancer, Mata Hari, who was executed by the French as a spy at Vincennes. I have read everything I have been able to obtain about her life and career, and have found no confirmation of the story. In fact, I do not think it was possible for her to have discovered the secret. Nor have I been able to find any corroboration of the equally romantic tale that it was communicated by another woman spy, one *Fräulein Doktor*, to a German technical officer, who would not listen to her warning and afterwards committed suicide in remorse at his mistake.

A story current at the time of Mata Hari's death was that two officers were heard talking.

"I say, old boy," said one, "*you* know everything. Who *was* it really that gave away the secret of the Tanks? "Why, the Japanese dancer—er—er—*Hara Kiri*, of course."

* * * * *

At the beginning of the Elveden period the only person on the spot, outside the Tank organization, who knew the secret was the Commander of the 69th Division, whose headquarters were at Thetford. It was not shared even by his staff. The mystery which had to be maintained about the whole business was

in many ways a drawback. This was especially noticeable when demands—which seemed fantastic in their proportions—were made on the various departments.

Before the preparation of the battlefield was started, an indent was sent in for one million sandbags. This not unnaturally paralysed the local Supply Officers, the normal demand for the training of a whole division being something like 10,000; and their astonishment was not diminished by a request for barbed wire by the mile. The climax came when our petrol requirements suddenly jumped from a quantity sufficient for one staff car to thousands of gallons. However, the thorough and whole-hearted backing of the Heads of Departments in London smoothed away all difficulties. Orders were sent out that any demand of the Heavy Section should be complied with, in full and at once, without question. And they were carried out literally. I have often been hampered by stickiness and red tape, which is not a unique experience, but no praise can be too high for the speed and efficiency with which this mysterious infant, with the Gargantuan appetite, was nourished.

In the same way our requests for troops, whether as guards or as working parties, were met by the Home Defence Command with the utmost celerity. In one case this led to an amusing contretemps. To prepare the battlefield two battalions of Pioneers were at first detailed; but it was not long before Tandy telephoned to warn me that he might require a third. I understood him definitely to ask for another battalion and at once passed on the request to the right quarter. The result was that within twenty-four hours Tandy—to his surprise—received a telegram informing him that a Pioneer battalion from South Wales would reach Thetford at some time on the following morning. "Please arrange."

Next morning two special troop-trains arrived. The commanding officer stated that he had been ordered to bring his battalion to Thetford to report to a Major Tandy, adding that he had received orders by telegraph the previous evening, just as the battalion had got back from a long route march: that it had spent the interval before entraining drawing equipment and ammunition, had been travelling all night, and was now "all present and correct." He spoke as if the Germans were close at hand and he was to lead his troops into action at once. He was not told that someone had blundered! Though no doubt disappointed that he had brought his unit post-haste all the way from Wales to dig a sham battlefield, neither his ardour nor that of his men, consisting largely of Welsh miners, was damped, as was shown by the will with which they delved—and sang.

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Apart from the production of Tanks and their armament, and the training of the personnel, many other requirements suggested themselves.

An important point was the provision of some method whereby Tanks could signal back towards their starting-point. It seemed quite possible that one or two machines, being bullet-proof, might in an attack penetrate far ahead of the infantry and be in a position to gather information of the utmost value not obtainable from the air. The obvious way to arrange for passing this back was by wireless. Accordingly, half-way through March the Royal Engineer Experimental Wireless Establishment at Woolwich was asked to design some equipment for this purpose, and the Commandant of the R.E. Wireless Training Centre at Worcester to " earmark " a few picked operators to be transferred to us if required. After many experiments and visits to Lincoln and Elveden the R.E. succeeded in producing a small spark-transmission equipment of about

200-metre wave-length and a range of some three miles. This had a short, folding, steel mast, and was designed to fit into the very cramped space available. Reception in a Tank was not possible, owing to the noise and vibration inside when the engine was running.

A secondary method of communicating back—namely by aeroplane—was concurrently evolved. The proximity of the Thetford aerodrome to Elveden was at first a nuisance and a danger, for it was impossible to conceal Tanks in motion from the airmen who were continually flying low overhead. All efforts to prevent pilots from crossing over the area were unavailing, and so a virtue was made of necessity. Under a pledge of secrecy the nature and purpose of the Heavy Section was divulged to the local officers of the R.F.C. This eliminated unhealthy curiosity and speculation, and led to co-operation, the R.F.C. handing over to us a large number of special daylight signalling lamps for communication between Tanks and aeroplanes. But the time was too short to evolve any definite system for this. What could be conveyed by code was very limited in extent, and the chain of transmission was so cumbrous and slow as to be almost useless.

Experiments were made in laying telephone cable by a Tank. A groove in the ground, some six inches deep, was cut by a ploughshare fixed at the back of the machine, and into this the cable was paid out from a drum. No conclusive results were achieved; and the short length of cable that could be carried on a Tank did not warrant great hope of success. The employment of pigeons was also discussed.

Short-range communication from Tank to Tank was carried on by means of metal discs and small flags waved out of the man-hole in the roof. It was realized, of course, that the discs might be shot away and would probably be invisible in the dust and smoke of battle, and that only the simplest messages

could be signalled. Inefficient as this system was, it was all that was possible.

But "Better is the sight of the eyes than the wandering of the desire," and not less important than facilities for transmitting information was the ability to obtain it—which depended on the power of vision, possible from inside a Tank. This was very feeble, the peep-holes in the armoured skin being mere slits framing glass prisms. It was realized that in action a Tank-driver would be acting in a local fog and semi-blind. And, while it would be impossible for him to steer and maintain direction from what he could see immediately around him, it was obvious that the ordinary mariner's compass would be useless inside a mass of metal such as a Tank. It seemed that the de-magnetised compasses used by the Navy might serve, and once more we approached our Fairy God-mother—the Admiralty. Captain Creagh-Osborne,¹ the head of the Compass Department, at once took up the matter, and not only arranged to supply us with reconditioned compasses of this type, but sent an expert to supervise the adjustment of them in the Tanks.

As a secondary means of helping the drivers, it was thought that a row of miniature dummy kite-balloons floating behind our line sufficiently high up to be visible above the smoke of battle, might serve as a kind of "land-mark" in the sky by which to steer a course. Twenty facsimiles, under twenty feet long, of full-size balloons, each with a car and dummy observer to scale, were therefore demanded. The cables were to be of the finest wire, which would allow of an ascent of a thousand feet. Signalling was to be done by smaller spherical balloons sent up the cable. It seemed to me that in addition to their proper role these dummy balloons might, for a time, at least, mystify the enemy and perhaps serve as bait to attract hostile

¹ Captain F. O. Creagh-Osborne, C.B., R.N. (Ret.).

aeroplanes—for which our own “ fighters ” would lie in wait. The balloons, with the necessary equipment, were made ; and so excellent an imitation were they that, from a little distance away, it was impossible to tell that they were not the real thing.

Camouflage was a matter of the highest importance, and in this great assistance was given by the late Lieut.-Colonel Solomon J. Solomon, R.E., the Royal Academician—a genial enthusiast on the subject—whose services were lent by G.H.Q. He was established without delay at Elveden, and supplied with tons of paint and other materials and a permanent detachment of men to work under him. As the distances were so great, he always rode his own pony to and from his open-air studio, thus giving tone, as a “ mounted officer,” to what was probably the least horsey unit in the Army.

Among other operations tried experimentally was the clearing away of entanglements by means of ordinary grapnels towed by Tanks. We also practised approaches across country by night up to the starting-points behind our line. This was difficult, but the task of the drivers was much facilitated by the route for each machine being marked out on the ground with tape dipped in luminous paint. Movement in single file was assisted by the tail lamp at the back of each machine. For the first time to feel the night air quiver with the throbbing of the engines and then to see the sinister shapeless masses loom up and lurch off in the darkness was an uncanny experience not easily forgotten.

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At Elveden we naturally did not have many visitors. One of the first was Colonel Estienne,¹ the originator

¹ Now General T. E. Estienne. The development of the French Tanks is described in some detail in the *Encyclopædia Britannica*, Vol. XXXII, 12th Edition, 1922.

of the French Tanks, or *Chars d'Assaut*, who came, by invitation, at the end of June, to see how we were progressing. By a coincidence, Colonel Estienne had been seized about the same time as myself with the idea that some kind of machine of the nature of the Tank was necessary to help the infantry. But in 1914 he had never heard of caterpillar tractors, which he saw for the first time in the winter of 1915, hauling howitzers in the British Sector. His original conception, moreover, had been for a bullet-proof vehicle to convey infantry safely through the wire and across the bullet-swept zone, whereas mine had from the beginning been for a fighting machine, not to carry men, but to force a passage through wire and "eat" the enemy machine guns—thus automatically enabling the infantry to advance on their feet. Later, his idea approximated to my own. A regrettable fact was that we were both working for a long time on parallel lines towards a similar end, each ignorant of what the other was doing.

I had never heard of Colonel Estienne until a few days before I met him at Elveden, nor had I any knowledge of what the French had been doing, nor how much they had been told of our progress. So far back as the previous February I had suggested that they should be informed of our experiments, and the French Military Attaché in London had been invited to see "Mother," which was retained at Hatfield for a few days for his inspection. But he had not been able to take advantage of the invitation. Colonel Estienne was full of enthusiasm for what he saw. I waived the rule forbidding "stunts"—such as the knocking down of trees—which were liable to damage the bellies of the machines, and for his benefit had a tree of twenty-six inches in diameter uprooted. I recall that he described the French Tanks then under construction as being neither so large nor so powerful as ours, but more "*souples*"—

like rabbits—as he expressed it. But the most vivid impression I have retained of his visit is his earnest and reiterated request that we should not use our Tanks, and so disclose their existence, before the French were ready to put their own into the field. In principle I was in agreement with him, and did not then know that we had any intention of acting otherwise.

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If I seem to have described the activities and vicissitudes of the microcosm that was the Heavy Section to the exclusion of any reference to the greater events taking place elsewhere, it is for the reason that this narrative covers my personal experiences, which were then entirely absorbed in creating this Arm. Nevertheless, we were not unaware of the developments outside our immediate sphere.

Of the occurrences in June by far the most important from the point of view of the nation, and indeed, of the Allies, were the Battle of Jutland and the irreparable disaster of Lord Kitchener's death. The news of the latter came to me, as to everyone else, as a severe shock, for though I had heard of his projected visit to Russia, I did not know that he had actually set out. Furthermore, in the direction in which I was particularly concerned, I felt that the repercussion of his death would probably have an adverse effect. Certainly he had not to my knowledge given any sign of being aware of the existence of the Heavy Section, and had probably been too immersed in weightier matters to give it a thought. But, in so far as its prospects were concerned, I had all along cherished the hope that when he saw a number of Tanks functioning, he would be convinced of their practicability and potential value, and would give our cause his sympathy and active support.

In regard to the larger aspect of the tragedy of

the 5th June, so much has been written that I hesitate to add a word. But I do not agree with those who hold that Lord Kitchener's death came at the right moment either for his own reputation or for the national welfare. He had by no means outlived his period of usefulness. Tired he, no doubt, was ; but few of those who bore only a fraction of his vast responsibilities were as fresh and vigorous in June, 1916, as they had once been. During a period of nearly nine months I had seen and heard him at the Dardanelles and War Committees, where I was able to discern something of his temperament and reactions. I was also able to appreciate some of the difficulties with which he had to contend in a crisis greater than any he had up till then experienced, and in an atmosphere entirely different from any to which he had been accustomed. In August, 1914, he had much to learn in the matter of delegating responsibility, and in acting, not as an autocrat, but as an equal among critical colleagues. The reciprocal clash of personalities, which Kitchener's reticence and reserve did little to conciliate, succeeded in aggravating misunderstanding until the position became unhappily strained. He had failings, and he certainly made mistakes. But his untimely death deprived the nation of the benefit of the lessons which the experience of nearly two years had taught him ; and he earned our eternal gratitude for his vision as to the real meaning of the War and his superhuman achievement in laying the foundation of our military strength. With his passing the Empire lost one of its greatest assets.

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To the efforts of those of us striving to bring the New Arm to life the progress of the War was an insistent background and a perpetual incentive. To us enthusiasts, every day that passed before the Tanks could play their allotted part meant the loss of lives

which might have been saved. This, indeed, was merely an intensification of the sentiment that had obsessed me personally for many months.

But beyond this urge on general grounds the actual trend of events on the Western Front in the early summer of 1916 was such as to cause an increasing demand for the Tanks to take the field. After preparation for the Somme offensive had started there had been one or two inquiries as to when there was a possibility of any being ready. The desire to make use of them is intelligible. It was evident, however, that apart from any consideration of the special war-time conditions, such as the competition for raw materials and manufacturing facilities, G.H.Q. had no conception of the difficulties involved in the production in bulk of a complicated and totally novel machine, even when the main design had been settled. This was shown by the naïve question as to whether any Tanks could be ready, with crews trained, by the middle of June—a period of four months after the demand had been made for their production!

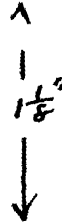
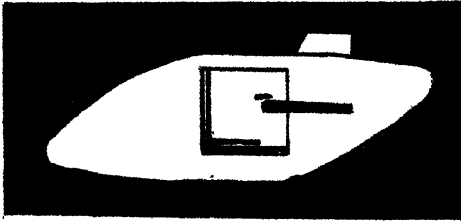
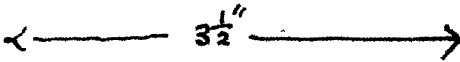
At the end of April I had expressed the tentative opinion that if machines were available in time the crews of seventy-five might possibly be trained by the 1st August. I restated this opinion in May. But by the end of that month it became clear that none would be delivered till nearly half-way through June and consequently this provisional and contingent forecast could not be fulfilled.

At the beginning of June the first Tanks were near enough to completion for one company of the Heavy Section, after having undergone all the training obtainable at Bull House, to move to Elveden. A second followed in a few days. That the delivery of machines did not quite keep pace with the estimated programme was not surprising. And as we had no experience to guide us as to the time requisite for learning to handle them, it was still very difficult to

say when even the first company would be able to proceed overseas. All sorts of new and unforeseen problems which continually cropped up had to be solved on the spot, and helped to make the period of preparation indeterminate.

And so, while all these measures were being inaugurated and pressed on against time and in the face of many obstacles, April, May, and June passed all too quickly in a prolonged fever of strenuous effort.

FULL SIZE



BLACK GROUND.

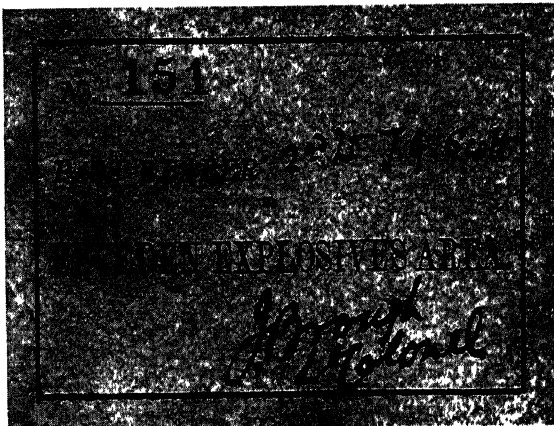
Tank is white

Spmsm raised in relief - outlined thick black.

6 pr gun in black

DS

ORIGINAL WOVEN ARM-BADGE AS WORN BY THE HEAVY SECTION
DESIGNED BY COLONEL SWINTON



PASS TO THE SECRET AREA AT ELVEDEN

The Crusaders

[June–August, 1916]

IT was in the desolate region round Elveden that the Heavy Section was now introduced to the weapon which had called it into being. About the time that the first company reached camp, "Mother" arrived, stripped of her guns; and instruction in driving began with this one machine. All ranks were much impressed with the grotesque monster and its incredible powers of climbing. By the end of June sufficient Tanks had been delivered for training on a larger scale; and as their number increased, more companies were transferred from Bull House, until the whole unit was established in the secret enclave.

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Whilst we were hidden away in our secluded corner of Suffolk, absorbed in preparing to play our part, great events were taking place on the Western Front. The German onslaught on Verdun, which had lasted for four months, still continued. But, on our side, measures were under way for an intervention that was to draw the enemy's attention away from the fortress on the Meuse.

During the closing days of June, though we at Elveden could not actually hear the thudding of the guns along the Somme battle-front, the reverberations of that cannonade were ever present in our minds, a

constant reminder of what was coming. And then, on the morning of the 1st July, after a prolonged bombardment of an intensity never before in our power to carry out, six British Army Corps went "over the top" in the most stupendous offensive till then ever attempted by British arms on land. In the words of the Official History :

"Never before had the ranks of a British Army in the field of battle contained the finest of all classes of the nation in physique, brains and education. And they were volunteers, not conscripts. If ever a decisive victory was to be won it was to be expected now." ¹

It was a repetition on a larger scale of our offensive at Loos in 1915. But there was a wide gulf between the two occasions. In nine months we had gained much experience; our preparation was now more thorough; and we had at our disposal an incomparably stronger force, especially in artillery. Though it was not possible for the New Arm to take part in this supreme effort, great expectations of success were entertained. Once again G.H.Q. counted on a breakthrough. All hoped that our confidence in the effect of our overwhelming concentration of guns would be justified; that in it the enemy machine guns and wire would more than meet their match; and that weight of metal would make up for the absence of Tanks. Only too soon did it appear that this was not to be. Vastly as our strength in attack had grown, that of the enemy in defence had increased more than proportionately.

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By now the major portion of the heavy work of the construction of the 150 machines in production was nearing completion, and questions of policy

¹ *Military Operations in France and Belgium 1916*, Vol. I, p. 315.

loomed up. If more Tanks should be required it was imperative to place the orders at once, not only to prevent dispersion of the labour which had been collected and to maintain continuity of manufacture, but on account of the increase that would be entailed in the ancillary services of repair, maintenance, etc. To meet the difficulty anticipated in getting the right type of personnel, I suggested that a number of men might be transferred from the Royal Marine Artillery.

G.H.Q. deprecated more Tanks being ordered until at least twenty had been tried on some definite tactical scheme and until we had seen the trials of the French Tanks which were being built. It then appeared that the High Command was set on employing a few as soon as they were ready, and was not prepared to wait for the whole number. To me this came as a shock, since both Sir Douglas Haig and his Chief of Staff had agreed that this should not be done. I regarded it as the throwing away of a chance of effecting something really big. But I was not in a position to know the situation at the Front nor to judge whether a few Tanks were likely to turn the scale in our favour. My duty was to carry out orders ; and as the decision had been taken, I—perhaps wrongly—made no further protest. I was too much occupied in trying to produce the unit against time to enter into discussions—which were bound to be fruitless—as regards policy.

The only thing to do was to press on with all speed and get ready as many Tanks and crews as possible by the time they were to be used. Progress, however, was hampered in every direction by the frequent failure of the machines, owing to minor defects. There were, in addition, the inevitable difficulties with guns, mountings, and various small fittings. It was eventually settled that one company should be sent to France in the first half of August, a second following if possible about the end of the

month. The argument was that their appearance would raise the morale of the troops, and that the situation was such that everything should be thrown into the scale, for the retention of any of our resources might make the difference between victory and defeat.

Meanwhile, as the Chief of the Imperial General Staff wished to see for himself to what stage preparation had been carried, an inspection of a number of Tanks in operation was fixed for the 21st July, by which time it was hoped that sufficient machines would be available and crews trained for one company to be exercised. The inspection was to be attended by Mr. Lloyd George, in his dual capacity of Secretary of State for War and Minister of Munitions.¹ He was much interested to see the development of the New Arm, which he had from the first backed and helped by every means in his power. The General Staff was to be represented by the C.I.G.S.—General Robertson—and the Director of Military Operations—General Maurice. G.H.Q. was also to send representatives. General Robertson and his A.D.C., Maurice, Brough and I spent the night of the 20th at Elveden Hall as the guests of Lord Iveagh; and there were in addition at dinner that evening Bradley and Mr. Bland, Lord Iveagh's agent.

The C.I.G.S., on hearing that our host had not been informed of the purpose for which his land had been seized and had refrained from trying to find out, decided that he should be let into the secret. After dinner, therefore, we repaired to the billiard-room, where Lord Iveagh was taken into our confidence and invited to witness the trial next day. Shaking an admonitory finger, the C.I.G.S. said, "But mind, there must be no talking!" to which came the modest reply, "No, no: of course not!" That being understood, Maurice, spreading out a large map on the billiard-

¹ Mr. Lloyd George had become Secretary of State for War on the 7th July.

table, proceeded to tell us of the coming renewal of the Somme offensive and to explain what the Tanks were expected to do. The part played in our repulse by the enemy machine guns was not minimized. It also became clear how even on the 1st July, as always previously, we had underestimated the strength of a prepared defence. The battle was now three weeks old, and all those present knew—to a greater or smaller degree—what the cost had so far been, whatever the estimate of the gain.

The atmosphere was subdued, the scene dramatic. The room, which was very large, and Eastern in its scheme of decoration—the place having been built originally by the exiled Sikh prince, Dhuleep Singh—was almost in gloom, except for the fierce glare poured downwards from the billiard-table lamps in their green silk shades. Bent over the table, studying the map, half in light, half in shadow, were two figures in evening dress and five in khaki, one of whom was pointing out different localities on the map as he spoke. The crouching group was suggestive of witches muttering an incantation whilst they compounded some deadly brew :

“ Double, double toil and trouble ;
Fire, burn ; and cauldron bubble.

Scale of dragon ; tooth of wolf . . . ”

More apt this incantation than any Hymn of Hate! For our dragons—with scales of steel—were at hand.

But, impressive as was the setting, the moment was not historic, for no decision was then taken. The die had already been cast—in France.

So to bed. Hard by, in the silent darkness, all among the young partridges, lay couched our dragons, fed, groomed, and anointed, in readiness for their dress-rehearsal on the morrow.

And farther off, 150 miles away, amidst the roar of

artillery and the fitful stutter of machine guns, intermittently lit up, lay the real stage—the blood-drenched battlefield on the Somme.

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All passed off well on the great day. After the C.I.G.S. had been conducted round the area to see the different schools, etc., he took up his position on the grandstand, a raised butt built of turf, in the centre of the mile-and-a-half long British front line, close to the *pièce de resistance*—the Becher's Brook of the course—a trench nine feet wide. We there awaited Mr. Lloyd George and party, who came down by train. Serious as was the occasion, it did not lack the comic element. Mr. Lloyd George was wearing a hat of uncommon shape and a flowing cloak such as he wore on his visits to France, and as he got out of his car, much suppressed laughter was caused in the rear rank of the guard of honour by a voice muttering, "The Bing Boy has arrived!" When he reached the grandstand, the Union Jack was broken from the flagstaff above, and a smoke-rocket snaked up into the sky, leaving behind it a dingy trail. This was the signal for "zero"; and the air quivered with the roar of the exhausts as the long row of twenty-five Tanks started from some way behind us. At the same time, glistening yellow in the sunlight, six or eight dummy kite-balloons about a quarter of a mile apart floated upwards from near the starting-points of the Tanks—a landmark for miles! Even from so close as we were it was impossible to discern that they were not the real thing.

As our most deadly secrets were thus being revealed, one by one, I suffered a momentary shock. Lurking behind the other spectators I espied a strange officer in uniform. His appearance impressed me unfavourably. I stared at him. He was furtive; avoided my gaze. Quietly I signalled to one of my staff to

demand his card of admission. As I thought—he had no card! I was on the point of ordering him to be led away into durance vile, but luckily had not committed myself, as the suspect turned out to be a prominent industrialist who was on Mr. Lloyd George's staff.

“The general idea” was for the Tanks to cross our front line, No Man's Land,¹ the German front line, then press on through the enemy zone to his artillery positions. They were to concentrate on searching and shelling, or flattening out the enemy machine guns (dummies made of wood) in their concealed nests. This was mostly a matter for the Males, though as far as crushing went, the Females were equally efficacious. To test the latter's defensive power there was to be a sudden surprise counter-attack by the hostile infantry from a clump of farm buildings well behind the enemy front line.

The absence of artillery and of the shattering effect of a mutual bombardment rendered the whole operation unnatural and uncanny, for loud as the Tanks roared, the sound was no more than a vast humming noise, which filled the air from north to south. On they came, and on, sliding, rocking, and pitching, then passed us, rearing up as they went over the top into No Man's Land. On they went, the sharp unpleasant sound of their 6-prs. ringing out as they ploughed their way through the wire and over the German parapet, some of them hesitating for a moment, up-reared, nose in air, before they slid down to the other side. We followed in their wake as they yawed from side to side, smelling out and crushing the bogus enemy machine guns. Then the machine guns of the Females got their chance, for with a cheer and a shout a swarm

¹ To the best of my knowledge this term, which became part of the English language during the War, was first used by myself in 1907 in a story called *The Point of View*, to describe this neutral zone between two opposing trench-lines.

of obviously *Boche* infantry, with broad red tape round their caps, rushed forward towards them. But the infantry—as such—could do nothing,¹ and the Tanks did not stop until the “cease fire” sounded. By one o’clock it was all over. Mr. Lloyd George expressed his great satisfaction, and all the spectators were much impressed.

Unfortunately the representatives from G.H.Q. who came by road, did not arrive till the “cease fire” was about to sound.

Immediately after lunch—as there is no longer a Press censorship I may say it—“the Captains and the Kings” departed for London. I travelled with them, and, as the train started, handed to Mr. Lloyd George some aerial photographs of the operation he had witnessed an hour and a half earlier. They had been snapped, landed, developed, printed, and sent down to the station by our friends of the Royal Flying Corps—a great feat.

The time taken in the preparation and execution of this show could ill be spared from training. But it did give practice in driving and team work by a number of Tanks. Moreover, it was “meet and right” that the Minister under whom they had been produced, and who was therefore now doubly responsible for them, and the representatives of the Army, by which they were to be used, should see them functioning in the nearest approximation to the real thing that could be arranged. The trial confirmed that at Hatfield and definitely showed that the Tanks could surmount all the obstacles of the battlefield on the Western Front—such as it had been before the opening of the Battle of the Somme on the 1st of the month. No demonstration was needed to prove that they could deal with machine guns or with infantry; nor was any proof required that they themselves could be knocked out by shell-fire. The essential fact which had emerged from that

¹ This is still so, sixteen years later.

morning's exercise—though not carried out under war conditions and consequently liable to serious qualification—was that at last it was possible to overcome the strongest form of defence devised since the introduction of firearms. For the designers and constructors of the new engine of war it was a day of triumph.

I had only one regret. On that day in early February, when "Mother" had executed her *pas seul* under the trees in Hatfield Park, there had been present one who had remained unconvinced. Sorrowfully I thought of the reason of his absence from the dress rehearsal at Elveden. Had he been there, it might have brought conviction.

* * * * *

Next day, at a conference with representatives from G.H.Q., it was arranged that, if possible, one section of six Tanks, with a workshop, should be on the sea by the end of the first week in August, the remainder of the Tanks to follow in lots of twelve at weekly intervals. The tactical idea underlying this was the employment of six Tanks at a time. With this proposal I disagreed entirely, since it would break up the organization and cut down the time available for training, which was already far too short.

Both for its ultimate historical significance and its immediate educative value on the conduct of the War—when the time for release should arrive—I was anxious to have a film made of the battle of the 21st July. A similar opportunity would never recur. For when Tanks came to be used in hundreds instead of tens it was not likely that conditions would permit of pictorial record. Such a film could have been put to immediate practical use in enabling the G.H.Q. Staff in France and those under whom the Tanks would fight to see exactly how they worked and what they could do. It might also have had the additional merit of obviating some of the wear and tear of the

machines caused by the repeated demonstrations they were actually made to give. From the official film photographer¹ I ascertained that pictures could be taken, and the strictest secrecy observed until the moment for release. Each operator could, if necessary, be guarded by an armed officer, the negatives taken, still under guard, to the War Office, to be developed and then deposited in a strong-room. But permission was refused, though it was agreed that the proposed measures to ensure secrecy would be adequate. The reason given for not seizing this unique chance to obtain a record was that G.H.Q. were nervous and considered that sufficient precautions were not being taken at home. This was a further example of the strange and exaggerated deference paid by the War Office to the views of G.H.Q.

Shortly after the formal inspection of the 21st we were honoured by a visit from the King, who had continued to maintain his interest in the Tanks. No hint of the identity of the visitor was given beforehand, and the reason assigned for the carrying out of a particular programme—in interruption of the routine work—was that a Russian general was coming down. His Majesty and a small suite travelled by special train direct to a station on the Barnham branch line, close to the battlefield. Five Tanks gave a display, repeating on a small scale the performance of the previous week. On this occasion there was no enemy. Naturally, once the King stepped on to the grandstand, the fiction of the Russian general was exploded. The news of his presence was speedily passed round, and when His Majesty drove away the road within the area was lined with cheering men. The Royal party returned to London by train, in which Brough and I had the honour of accompanying His Majesty, who expressed his gratification at what he had seen.

¹ Dr. E. Distin Maddick.

The number of Tanks now in dock requiring adjustments and repairs of a nature which could not be carried out quickly with the improvised means at our disposal made it impossible to send out even a few in advance so early as wished for by G.H.Q. To cope with the situation Stern arranged for the assistance of a party of volunteers from the mechanics of the Metropolitan Carriage, Wagon, and Finance Company in Birmingham, where the greater number of machines had been manufactured. These men, billeted near the area, and fed from a restaurant car furnished by Colonel Sir Henry Thornton, the General Manager of the Great Eastern Railway, saved the situation. Through their efforts we were enabled to dispatch half a company by the middle of August.

* * * * *

In this long story of the early days, I have frequently alluded to the Army Service Corps.¹ As reference has just been made to a specific occasion on which its efforts had to be supplemented, it seems an appropriate moment to say something more about the part it played.

From the time that the Director of Transport with the B.E.F. lent an officer to design and create our workshops, the Heavy Section had every reason to remember with gratitude the great and generous help continuously rendered to it by the Army Service Corps. We were a combatant, but essentially technical unit; and the only branch of the Army upon which we could lean for help in the technical side of our duties was the Mechanical Transport Branch of the A.S.C., which was not only the authority on that subject generally, but alone had any experience in track traction. When specialists were required both for the mobile workshops and for the execution of running repairs at home, the assistance of the Director

¹ Now the Royal Army Service Corps.

of Supplies and Transport at the War Office was invoked, and with his goodwill and that of the Quartermaster-General a nucleus of skilled drivers and of mechanics under special officers was collected.

This, when mobilized, became No. 711 M.T. Company of the A.S.C., and was sent to Elveden to be attached to us and entirely at our disposal. The strength of the company, under Major Knothe, gradually increased to about ten officers and 300 men.

With temporary workshops improvised in the open, this company undertook the reception and maintenance of the Tanks as they arrived, and the training in driving. It toiled night and day under most difficult conditions—sometimes aggravated by bad weather. The work was incessant, for the Tanks were a new type of machine made at great speed, and many broke down and required minor repairs and adjustment so soon as they were run. The hydraulic tail, though a marvel of mechanical ingenuity, was in practice a continual source of trouble, and was found to be unnecessary. We were all working at top pressure, but not the least busy were the members of No. 711 Company. When it is remembered that, though only doing their duty—as were all of us—they were working for another Corps, their unstinted effort is deserving of the highest praise.

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By the end of July one wireless set for each company had been delivered, and the R.E. operators had reported. Since the Heavy Section was to proceed overseas by instalments, it was intended to give each of the first companies to go two sets of equipment, which would double their transmitting power. Then, at the last moment, G.H.Q. ruled that the Tanks were not to be fitted with wireless—so far as I remember—because of the possibility of “interference” with existing installations. The equipment

was therefore returned to Woolwich to be dismantled, and the operators were sent back to Worcester.

The dummy balloons, also, were ready ; men were practised in their use, and the supply of hydrogen was arranged. Again at the last moment, it was decreed by G.H.Q. that the balloons should not be sent out—lest they might draw fire. Once more it was a case of being “ All dressed up and nowhere to go.” And so ended our attempt to strengthen the feeble sense of direction of the Tanks.

They were condemned to go forth to battle having eyes (of a sort) to see, and ears to hear, but no voice with which to speak. Some months later, as a result of experience in the field, the possible advantages of wireless communication were realized, and fresh experiments in this direction had to be made.

But it is an ill wind that blows nobody any good. As the Royal Flying Corps had been so kind to us in the matter of signalling lamps, we handed the balloons over to the Air Defence of London, to be used as targets—somewhat costly ones perhaps—for its anti-aircraft guns.

* * * * *

As the time approached for the departure of the first detachment the pace quickened. Bull House gradually faded out of the picture, and I spent my time between London and Elveden, with occasional visits to Birmingham. In my diary of this period I find references to such widely different matters as : behaviour of officers, training-instructions, huts, luminous tape, preserved rations, spare parts, fore-sights for machine guns, extensions to telephone, bicycles, sponsons, track-spanners, storage of water for machine guns, revolvers, instructions for driving, lubricating oil, petrol, rockets, canvas covers, bullet-proof shields for hydraulic gears, telephone cable and drums, proof of 6-pr. guns, protection of engines against chlorine gas, anti-bomb roofing, etc., etc., etc.

In order to work in co-operation with France, Brough went out to G.H.Q. to give the General Staff our latest information and elicit their views as to the employment of the Tanks. He returned, however, without having been able to ascertain whether they held any. Considerable difficulty had been experienced at home in moving the Tanks by rail, owing to their size and weight, which necessitated the use of special trucks ordinarily employed for carrying boilers and similar loads. Of these there were more than one type. In order to give the railway authorities in France the benefit of our experience, I sent out to G.H.Q. an officer who had been attached to me for such work, being in peace-time an official of the Indian railways. On the subject on which he was an expert he could not obtain a hearing; but he was consulted on such questions as further training in France, of which he was entirely ignorant. In the event, when the time came for the Tanks over there to be railed, difficulties similar to those we had had to overcome in England had again to be faced.

At Elveden training continued at full blast in driving, negotiating the obstacles of a battlefield, and maintenance. There was no time for practising the Tanks in accordance with any elaborate tactical scheme. All that could be taught was the art of manœuvring together with the straightforward object of searching out and destroying machine guns emplaced in every kind of artfully concealed position. Had there been time the next step would have been combined operations with infantry. Of the various instructions prepared and issued the following child's guide to knowledge is reproduced as an example of dignified official language:

TANK TIPS

Remember your orders.
Shoot quick.

Shoot low. A miss which throws dust in the enemy's eyes is better than one which whistles in his ear.

Shoot cunning.

Shoot the enemy while they are rubbing their eyes. Economize ammunition and don't kill a man three times.

Remember that trenches are curly and dug-outs deep—look round the corners.

Watch the progress of the fight and your neighbouring Tanks.

Watch your infantry whom you are helping.

Remember the position of your own line.

Smell out the enemy's machine guns and other small guns and kill them first with your 6-prs.

You will not see them for they will be cunningly hidden.

You must ferret out where they are, judging by the following signs :

Sound.

Dust.

Smoke.

A shadow in a parapet.

A hole in a wall, haystack, rubbish heap, wood-stack, pile of bricks.

They will usually be placed to fire slantways across the front and to shoot along wire.

One 6-pr. shell that hits the loophole of a M.G. emplacement will do it in.

Use the 6-pr. with care ; shoot to hit and not to make a noise.

Never have any gun, even when unloaded, pointing at your own infantry, or a 6-pr. gun pointed at another Tank.

It is the unloaded gun that kills the fool's friends.

Never mind the heat.

Never mind the noise.

Never mind the dust.

Think of your pals in the infantry.

Thank God you are bullet-proof and can help the infantry, who are not.

Have your mask always handy.

One direction in which we found special difficulty and were subjected to avoidable delay was that of target practice for the 6-pr. guns. It will be remembered that though we had practised shooting—over water at Whale Island, and over land on Salisbury Plain—there had been no opportunity of doing so from a Tank in motion. In spite of the fact that our area was so large, for firing shell a stop butt was essential. My solution was to utilize as such some farm buildings in the centre of the ground. Since they were bound to be damaged, the obvious course was for the Government to take them over at a valuation. As soon as I obtained sanction for this expenditure from the War Office, we commenced shooting on the move on this improvised range. But no sooner had we started than practice was stopped by order of the War Office. On my representation that the Tank crews would have to go to France without ever having fired their guns from Tanks, this embargo was withdrawn. But valuable time had been lost.

At the beginning of August, Brough, with Kyngdon, went back to France to precede the Heavy Section and help to prepare for a continuation of its training. The right half of "C" Company, following its thirteen Tanks, was to entrain on the 14th, the left half company nine days later. The machines were to be shipped to Havre via Avonmouth, which was one of the few ports at which there were adequate loading facilities. The personnel was to travel *viâ* Southampton.

During the night loading of one lot of the Tanks to be dispatched there was an exciting episode. In and out of the cold light and exaggerated shadows of the acetylene flares, the machines were crawling, one

by one, up the ramp, against which a train of flat trucks had been backed, and lurching along the train as far as each could go. Tanks were everywhere; sponsons were everywhere; and all around was a scene of bustle. Suddenly a whistle shrilled out; the dazzling light changed to darkness—all the blacker by contrast; the din died down to silence and the vibrating air became still. Then a faint drone in the distance, the dull roar of bombs, and a Zeppelin was seen high up in the direction of Thetford. The airship came on and on, the roar of its engines growing ever louder, till it was almost overhead and its gondolas could be distinguished. With the guilty conscience of men in possession of a secret, those below wondered whether the Germans had got wind of theirs, and had sent the airship to search out the lair of the Tanks and destroy them before they left. There was no sound or sign from the men on the ground, cowering like field-mice from a circling owl, whilst the Zeppelin made a wide cast round, apparently looking for something; and great was the relief when it turned away and finally vanished. After some time the "All clear" was sounded and work proceeded through the small hours. As a matter of fact, the Germans knew nothing whatever of the Tanks, or of Elveden, and were in reality searching for the aerodrome.

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On Sunday, the 13th August, with mixed feelings I bade farewell to those going overseas. The whole of "C" Company—some thirty officers and 250 other ranks—was paraded under the pine-trees on a slight rise behind the centre of the British line. This was the first opportunity, since Bull House, that I had had of addressing so many of my command together. Sitting "easy" round this small natural amphitheatre, we lit our pipes. I explained briefly and in simple language the whole Tank idea, and drew a picture—

as I saw it—of the action in which those in front of me might expect to find themselves. I reminded them that they must inevitably make mistakes and experience bad as well as good luck ; but that they were going forth to battle with the express and special object of helping their unprotected comrades of the infantry, and that if at the end of the day they felt, in spite of mistakes, that the infantry had cause to thank God for the Tanks, they would have done their duty.

Just such a valedictory talk as was given on hundreds of similar occasions during the War, but in this instance with an added touch of romance. Not only were most of those now addressed about to undergo their baptism of fire ; they were setting out on a crusade, and were pioneers in a new form of warfare. Doubly was theirs a great adventure.

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CHAPTER XIV THE TANKS GO INTO ACTION

The Secret Revealed

[August–September, 1916]

ON the 19th August I paid a hurried visit for one day to Advanced G.H.Q., then at Beauquesne. Sir Douglas Haig saw me and pointed out on the map the sector where he proposed to throw in the Tanks. He did not enter into any discussion of his reasons for using them at that time.

Ten days later I was again at Beauquesne for two days, with Bradley. The official atmosphere was not very helpful. In many quarters there was an air of amused tolerance or contemptuous scepticism towards the New Arm, in some a tendency to place too much reliance on the influence of a few Tanks to make up for the recent disappointment of the offensive. There seemed to be little inclination to make allowance for the imperfections of a brand-new weapon or for the difficulties of those who were handling it in strange surroundings after very little practice. Training was being carried out at the centre at Yvrench, near Abbeville, where "C" Company had been concentrated.

The thing that struck me forcibly was that the Tanks were looked upon as a new kind of toy. The Heavy Section was made to give frequent displays, which crowds of officers, both French and British, came from all quarters to witness.

On the subject of the period before the Tanks

went into action an officer of the Tank Corps¹ has written :

“ Meanwhile, the Tank crews and commanders had been enjoying three or four days of almost comically complete nightmare. In the first place, they had all manner of mechanical preoccupations—newly arrived spare engine parts to test, new guns to adjust, box respirators to struggle with, and an astonishing amount of ‘battle luggage’ to stow away. But worst of all they found themselves regarded as the star variety-turn of the Western Front.

Already, before leaving Thetford, they had given a demonstration before the King and several members of the Cabinet. At Yvrench they had performed before General Joffre, Sir Douglas Haig, and the greater part of the G.H.Q. staffs, but on reaching the Loop² they found to their horror that it was to be ‘Roses, roses, all the way.’ A Tank commander wrote bitterly :

‘It rather reminded me of Hampstead Heath. When we got there we found that the Infantry Brigade had been notified that the Tanks were to perform daily from 9.0 to 10.0 and from 2.0 to 3.0, and every officer within a large radius and an enormous number of the Staff came to inspect us. We were an object of interest to everyone. This did not help one’s work.’ ”

I saw one of these shows near Yvrench. It consisted of an advance of much the same nature as that carried out at home five weeks earlier, but over an inferior battlefield. I did not discover that there was any more elaborate tactical scheme underlying the operation. The antics of the Tanks caused amusement, and by many of the spectators the exercise was not taken seriously. After the advance it became

¹ *The Tank Corps*, by Major Clough Williams-Ellis, M.C., pp. 25-26.

² The Loop was the next concentration area before the Tanks went on to their points of assembly before going into battle.

like a circus. Some of the machines were asked to force their way through a wood and knock down trees—tricks which they had not been designed to play and which were likely to damage them seriously. I protested against these “stunts” and the frequent exhibitions, which were wearing out both machines and personnel. In addition to the almost continuous work of repairing, cleaning, and tuning up their Tanks, the men barely had time to eat, sleep, and tend themselves. I speculated as to how many machines would be one hundred per cent. fit to go into action when their day arrived; and wondered how the Royal Flying Corps would have fared if it had made its *début* during the War with fifty aeroplanes of the first type produced, and had had to submit to similar preliminaries before it went into action. As had been the case in England, it seemed impossible to establish a realization of the fact that the New Arm was a mass of complicated, and in some ways delicate, machinery in an embryonic shape, and not the fool-proof product of long trial and experience. Much of the ignorance in regard to its capabilities and limitations existing amongst the senior officers would have been dispelled if my memorandum of February had had even a limited circulation.

The Prince of Wales, who was as keenly interested in the New Arm as the King had been, paid several visits to the Heavy Section at the Tankodrome near the Loop. He studied the machines and the final preparations being made for their employment with eager attention. The personal interest shown by him was of the greatest encouragement and practical help to the officers and men in their difficult task.

It was evident that that section of G.H.Q. set on using the Tanks at once had been carried away by the need of the moment to bank too much on what might be accomplished by fifty of them. And I was taken aside by a senior officer who besought me to

exert my influence to prevent the whole plan of operations being allowed to depend on the performance of these yet untried machines. I endeavoured to do so ; but those in control were in no mood to pay attention to me, or, indeed, to anyone from home.

Brough disapproved of these displays as strongly as I did, and must have shown his feelings rather plainly, for I was pained and astonished to be told that he was not a *persona grata* at G.H.Q., and that his replacement by another officer was desired. The reason given was the usual one forthcoming when explicitness is avoided, namely that he was "difficult." He probably was. He certainly had reason to be. He had rightly pointed out that but little was known as yet of the powers of the Tanks, and that there had been insufficient time to train their crews fully. He deprecated the employment of a small number of machines and urged the necessity for a first effort on as large a scale as possible. That his views were not acceptable at G.H.Q. was, however, no justification for changing the commander of a brand-new force two weeks before it went into action for the first time. It was, in addition, an injustice to a very capable officer. The most that I could do was to extract a promise that his replacement should not militate against his being employed in France in the future. So Brough came home, and Bradley went out to reign in his stead.

It had been expressly laid down that the Heavy Section headquarter-staff in France was to consist of no more than one lieutenant-colonel and one staff captain, a number quite inadequate to cope with the multifarious duties entailed in the final preparations. It was soon to be largely increased.

By the end of the first week in September "D" Company had arrived in France, reaching its point of assembly on the 13th—two days before it went into action—after one half-company had done one day's firing practice.

An account of the arrival of the first detachment of the Heavy Section was given me by an officer of the railways, in civil life a distinguished mechanical engineer. A long train of flat trucks, each carrying what looked like a monster parcel swathed in tarpaulin, was backed into the siding, tail against the ramp. The parcels on being "unswaddled" revealed themselves as Tanks. The engine of the first was started up, and the Tank crawled off the end of its truck, down the ramp, to ground-level, where its sponsons¹ were brought up to it from another train and bolted on. It heaved itself out of the way, and the second Tank followed, crawling over the truck just vacated by the first. The third, fourth, fifth, etc., did the same, sliding over an increasing number of empty trucks till they reached the end of the train.

Experienced engineer as my informant was, he watched the unique performance with amazement. The officers and men, having spent many hours in the train, were dirty and unshaved and suffering from loss of sleep; consequently they did not carry out this unrehearsed detrainment with the smartness and precision of a Military Tournament turn. None the less, my friend expected that what was in truth a remarkable display, and one such as had not yet been witnessed in France, would be received with a few words of approbation. The only encouragement, however, given by a senior officer who had been looking on, watch in hand, amounted to three words barked out: "Not quick enough!" By what means this individual was able to gauge the time required for an operation which he had never before seen performed was not evident.

The incident was trifling. But it was significant of the atmosphere into which the innocent "Babes

¹ The sponsons were the projecting portions of the Tanks which carried the guns or machine guns on each side. They were detachable for travelling by train.

in the Wood " were suddenly plunged when they fell into the hands of the " Wicked Uncles " in the jungle of G.H.Q. ! It caused deep resentment in the mind of the non-professional witness—as it did, no doubt in the minds of those who were addressed. It was an example of the erroneous idea too frequently held by a certain type of officer—that gruff ungraciousness is a sign of efficiency and importance.

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After I returned from France on the 1st September I was fully occupied between London, Elveden and Avonmouth. Training with Tanks continued at top pressure as we received them, our aim being to send more companies overseas as soon as possible. There was also much to be done in the way of collecting and dispatching new and extra equipment, some of which had to be manufactured at the last moment. The third company to go out—" A "—reached Yvrench on the 14th.¹

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On the morning of Friday, the 15th September, 1916, in a ground mist which lay like a blanket over the valley of the Somme, was born a new era in land warfare. At six-twenty, " zero hour," thirty-two Tanks of " C " and " D " companies of the Heavy Section, commanded respectively by Major A. Holford-Walker and Major F. Summers, sallied forth in the attempt made by the Fourth and Reserve Armies to revive the momentum of the Somme offensive which had already lasted for ten weeks.²

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¹ " B " Company, which was the last of those to go out to France, followed later.

² Of this action and the others in which the Tanks took part during the War I do not attempt to give any account. I was not

I had been told that the Tanks would probably be used on the 15th or 16th, and that I should be advised of the exact date, so that I might be present. On the morning of the 14th I received a letter from G.H.Q. announcing their *début* on the following day and inviting me to go to France. Unfortunately it was already too late to catch the morning boat, and there was nothing else going across that day even in the way of a cargo vessel or barge. It therefore happened that I was not in France when the Tanks went into action. Practically, my presence or absence made no difference, since they were not in any way under my control. Sentimentally, I much regretted not to be at hand when the New Arm received its baptism of fire. But my recollection of how much an onlooker could really see of a battle tempered my disappointment. As Mr. Churchill says, "It is impossible to see a modern battle. One is always either too far or much too near." The best I could do was to travel by next morning's packet.

During those four years of war there must have been few for whom the arrival at, and departure from, the ports of France did not mark a crisis in their own personal affairs. I was no exception. But, overshadowing all such minor matters, the landing-stages of Boulogne and Calais will for me ever remain ineffaceably associated with events of far greater moment. Long before Boulogne came into sight on the morning of the 15th September the Rubicon had been crossed, and the Tanks put to the test. I wondered with what result? I tried to picture the battle, the experiences and feelings of the Tank crews in their maiden effort to fight in machines; and three

present. Fully detailed descriptions, some by men who took part in the operations, are to be found in the works mentioned on p. 23. Unfortunately the *Official History of the Military Operations in France and Belgium* has not yet reached the time of the first appearance of the Tanks.

lines of Kipling's *Ballad of the Clampherdawn* came to my mind:

'And the scalded stokers yelped delight,
As they rolled in the waist and heard the fight
Stamp o'er their steel-walled pen.'

I felt that the men of the Heavy Section in their steel-walled pens should have been able to do considerably more than hear the fight, and with five times as good a chance of escaping hurt as their infantry comrades outside.

With pleasure, also, I imagined the consternation of the enemy—the feelings of the German machine gunner, by now accustomed, thumbs pressed on the double button of his gun, to mow down our oncoming infantry,¹ while he in vain emptied belt after belt of ammunition against the strange monsters which loomed up out of the morning mist and came lurching and sliding on and on, over trenches and through wire.²

We had not to wait long before we learned the result. The news reached us before the gangways were in place—how I do not remember—it was in the air. All the British on the landing-stage were agog with rumours of a great success, and there was much rejoicing over the message reported to have been sent back by an airman—"A Tank is walking up the high street of Flers, with the British army cheering behind it." Burning with curiosity and in a glow of anticipation, I drove to G.H.Q. The first person I met—just outside the ramparts of Montreuil—was the officer who had deprecated too much reliance being placed on the new weapon. He now almost

¹ "Tak, Tak, Tak, Tak . . . a single sweep of the machine gun accounted for more of them than ten mothers could have borne in as many years."—*In the Line*, by Georg Bucher.

² A remarkable picture of the first appearance of the Tanks from the German side is given in the story *Panzerkraftwagen*, by F. Britten Austin, first published in the *Strand Magazine* in 1917, and reprinted in *Thirteen*, published in 1925.

succeeded in quenching my nascent enthusiasm by his less than very faint praise.¹

At advanced G.H.Q. I obtained a more detailed and less gloomy account of what had happened. Here the impression was that it might prove to be the greatest success we had had, and much of the deterioration which, it was thought, had taken place in the enemy ranks, was ascribed to the Tanks. I learned that they had not brought about a breakthrough, and that from different causes several of the machines had failed. Bearing in mind the nature of the test and other factors, this, I felt, was to be expected. As regards surprise, it was discovered from prisoners captured during the fight that the German first-line troops had been warned previous to the 15th that some kind of armoured car was going to be used against them, and that on the afternoon of the 14th the presence of the camouflaged Tanks "lying up" had been spotted from a kite-balloon or aeroplane, and the probability of an early attack realized. Shortly before it took place, also, orders had been given for the issue to machine guns of armour-piercing bullets for use against aircraft. It was thought in some quarters that these were in reality for employment against the Tanks.²

But even if the enemy did get wind of something, it was at the last moment. And any warnings must have been of so vague a nature as to exaggerate the apprehension of the troops and increase the effect of the attack. To all intents and purposes it was a surprise.³

¹ Mechanization now has no supporter more *déterminé* than this officer.

² This is unlikely. There could have been no object in thus concealing the true reason for this precaution.

³ The Germans obtained the first technical details of the Tanks from a wounded member of a Tank crew who became delirious; but his statements were not believed in Berlin.—Colonel Nicolai, *Geheime Mächte*.

As the headquarters of the Heavy Section were then at Bray-sur-Somme I decided to postpone my visit there and to report to the Commander-in-Chief that evening. After dinner I repaired to Sir Douglas Haig's headquarters. Here I ran up against a very smooth proposition in the person of one of the Commander-in-Chief's staff, who did his best to convince me that the "Chief" was far too busy and tired to see me. Suave as he was, with a perfect bedside manner, he did not succeed in heading me off.

Unless carried to the point of sterilization, which is too often the case, the segregation of the big man—the controlling brain—from the herd and from all minor worries and distractions is a sound principle. There was, and is, no more severe critic than myself of the practice of a leader who allows himself to be immersed in the duties and troubles of his subordinates and thus renders himself incapable of seeing the wood for the trees. But the principle of isolation has limits. I insisted that the Commander-in-Chief should at least know that I was there, and be given the chance to see me if he wished. He received me almost at once and very cordially. He thanked me for what I had done, and said that though the Tanks had not achieved all that had been hoped, they had saved many lives and had fully justified themselves; that he wanted five times as many; that he wished the existing arrangement to go on; and that I should go home and continue to command, raise and train the force, and Stern should carry on with supply. These were the first words of appreciation given to the Tanks—to my knowledge—since the King saw them at Elveden.

* * * * *

Next morning I went on to Bray and saw Bradley and some of my officers who had been in action. The former was in a state of great perturbation.

In addition to the legitimate work and excitement attendant on the fighting of the previous day, he was almost distracted by numerous peremptory inquiries for all sorts of information which it was quite impossible for him to collect quickly from the two companies spread out over a considerable stretch of front. From him I learned something of our casualties.

On my return to Beauquesne I was informed that it was thought desirable that the command of the Heavy Section in France should be held by an officer who had been for some time on the Western Front and was familiar with the nature of the fighting and the existing organization and methods, etc., etc. After what had occurred to Brough I was not surprised.

* * * * *

After the period of static warfare had once commenced at the end of 1914 for more than three years the operations did not undergo any radical change in nature. They were to a great extent repetitions of the same thing carried out on a progressively increasing scale, and with improvements and modifications suggested by experience. The development was all in one direction—that of coping with a defence, the strength of which was only gradually appreciated—and was largely contingent on the increasing employment of artillery. All this tended to elaborate preparation, and meticulous care in execution. It was a period when, as Sir Ian Hamilton wrote of the Dardanelles operations,¹ “swiftness in war comes from slow preparation.” The actual conduct of such operations, however, did not call for a lengthy apprenticeship on the part of anyone with brains and possessed of military knowledge. Yet the current idea was that only those who had served on the Western Front

¹ *Gallipoli Diary*, by General Sir Ian Hamilton, G.C.B., G.C.M.G., D.S.O., A.D.C.

from the beginning of the War, or for a long time, could possibly learn "the game" sufficiently to be entrusted with command. In this, I am afraid, the spirit of a certain and growing clique exclusiveness was not entirely absent. In the evolution of the tactics of the attack the Tanks were the chief innovation. And as the essential principle underlying their application called for a revision of preconceived ideas and established practice a lengthy apprenticeship in previously accepted methods might well prove a doubtful advantage.

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When I was consulted as to the future commander of the Heavy Section in France I felt that there was no one of the unit sufficiently senior to propose. Both my senior officers had by then failed to find favour in the eyes of G.H.Q. I therefore suggested Lieutenant-Colonel Hugh Elles, a brother Royal Engineer, whose name has already been mentioned. Elles had been remotely associated with the Tanks since the previous January, and after the Heavy Section had arrived in France had held a kind of watching-brief as a liaison officer between it and the rest of the Army. He was to my knowledge a first-class officer, and last, but not least, he was *persona gratissima* at G.H.Q., and knew every one and all the "ropes." I could think of no one more suitable, in spite of the fact that he knew as little about the Tanks as his two predecessors did of the niceties of the tactics current in France.¹ To meet the objection that he was not sufficiently senior I suggested that he should be given the temporary rank of colonel. Elles was obviously the best choice for the post, and I have no doubt that he would have been selected for it whether I had proposed him or had not done so. Such was the manner in which the appointment was made of the

¹ It was for this reason that he at first refused the post.

man who commanded the Tanks in the field with such conspicuous ability and success until the end of the War.

* * * * *

The following day, Sunday, I visited the headquarters of the Reserve Army, but General Gough, who commanded it, was not there. I also called in at Fourth Army Headquarters to see the Army Commander under whom the greater number of the Tanks had fought two days earlier. General Rawlinson had been sceptical about the machines before they were used, and he was not now enthusiastic about their actual performance.

Enthusiasm was not called for. But what might have been expected was less criticism, more encouragement, and some recognition of the fact that this had been the first performance of a new Arm hastily thrown into the fight with untried weapons and semi-trained personnel—indeed no more than a beginning, the first faltering step of a baby giant requiring only nourishment. On the contrary, it was apparent that the youthful Heavy Section was not to have the constructive backing of the leader of the Army with which it had made its *début*, at the stage when such help would have been most valuable. In writing to Lord Derby a few days later, General Rawlinson did make some allowance for these factors ; but his appreciation was still of the negative nature which is conveyed by very faint praise. It needed the attack at Cambrai in November of the following year to convert him, though the results then achieved were no more than had been foreshadowed on the Somme in September, 1916.¹

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¹ For eleven years I was puzzled as to why no Tanks had been employed in Mesopotamia, where they might on certain occasions have been valuable. I then discovered that General Maude, who

Stern had arrived at Beauquesne on the previous evening, and Sir Douglas Haig saw us both, together with General Kiggell and some other officers. He again expressed his appreciation of the achievement of the Tanks, repeating what he had said to me two nights before. This interview seemed to settle the future of the Heavy Section and the position of both Stern and myself.

* * * * *

Next morning the Deputy Chief of Staff, Stern, and I started by motor for Paris to see the French Tanks. Here—for the second time—I met Estienne—now General and Commander of the *Artillerie Chars d'Assaut*—who could not refrain from voicing his regret that we had paid so little attention to the request he had made when at Elveden. We found that the French machines, as he had said, were more *souples* than ours, but their climbing and cross-country powers were not so good. After dinner we left Paris by motor for Boulogne. We travelled post-haste; at Boulogne we went straight on board a destroyer; at Folkestone Stern's car was waiting to carry us on to London. En route we made a collection of the morning papers, which gave us some conception of the sensation caused at home by the appearance of the Tanks. Though the correspondents could not have had much to go upon, for them it was a Bonanza; and to me as an ex-scribe the headlines and the terms applied to the Tank were an education. Amongst the latter were: "Land Dreadnought," "Old Ichthyosaurus," "Giant Toad," "Motor-Monster," "Jabberwock with eyes of Flame," "Hush-Hush," "Touring Fort," "Travelling Turret," "Whale," "Slug," "Boo-

was commanding the British forces in that theatre, did not ask for any because he heard from General Rawlinson, in December, 1916, that they were no good.

jum," attention being principally concentrated on the exploits of a machine called *Crème-de-Menthe*.¹ It was obvious that the censorship had been relaxed since my day, and equally obvious that there had been a certain amount of leg-pulling in regard to the powers of the New Arm. I wondered how I should have treated such a sensational story if I had still been carrying on my old ploy; and with envy realized that the professionals would have had me beaten to a whisper.² But whether warranted or not the general tone of cheerful optimism was infectious. And it was in this rosy atmosphere that we reached London Town. And so I brought "the good news from Ghent to Aix"—or, rather, from France to Whitehall.

After a shave, bath and breakfast, I hastened to the War Office, tired and hollow-eyed, but—like Little Jack Horner—suffused with a glow of smug self-satisfaction. Though all I could have wished had not been achieved, I felt that something had been done. In this mood I reported to an officer whose room adjoined that of the Chief of the Imperial General Staff. The latter looked in a few minutes later. I stood up and saluted.

"Ugh!" he said, "you look as if you'd been up all night!"

I replied that I had.

"Ugh!" repeated the C.I.G.S. as he retired to his own room.

But there was more inward spiritual grace in this greeting than the outward sign denoted, for, unknown

¹ All the Tanks had names as well as numbers.

² Public excitement naturally did not die down for some time, and for days many lurid stories about the Tanks were current. Amongst other "real truths" were the following:—That the Tanks carried a crew of 400 men, were armed with 12-inch guns, had a speed of 30 miles per hour, were constructed in Japan by Swedes, and—dire insult to the Heavy Section—were officered by airmen who had lost their nerve!

to me, the C.I.G.S. telegraphed the same day to the Commander-in-Chief that Stern, I, and some others concerned should receive some "immediate" rewards as "a valuable encouragement and appreciation."

I continued the report I had been making. It was a moment for the consideration of big things and important developments on the grand scale. I was therefore again staggered when my superior, with an extraordinary grasp of detail, proceeded glibly to rough out on his blotting-paper a war establishment for the enlarged unit desired by the Commander-in-Chief, even carrying it so far down the scale as the humble but apparently inevitable *bâtman*. It occurred to me that the great minds in the Military Hierarchy had much to consider, and do, before they got down to *bâtmen*. There followed a conference at the War Office at which I was not present. Sir Douglas Haig's demand for more Tanks was discussed, and it was agreed that 1,000 should be constructed. Stern at once placed the necessary orders, which included 30,000 ton weight of armoured vehicles, 1,000 6-pr. guns, and 6,000 machine guns.¹

Two days later by command of the King, I went down to Windsor to report the progress of events in France. This I did to the best of my ability, and His Majesty's reception of me did much to restore some of the complacency I had recently lost. Next day, with two officers from the War Office, I made a tour of inspection to find a more suitable training-ground than Elveden for the projected enlarged Heavy Section. This visit resulted in the establishment of the unit at Bovington in Dorset, which has ever since remained its centre. Meanwhile training was to continue at Elveden until a move could be made.

Now that the existence of the Tanks was public property we had more visitors at Elveden, some dis-

¹ *Tanks, 1914-1918*, p. 98.

tinguished and some not. But it was never degraded into a show place. On the 2nd October I took there with me the Russian General who was the Head of the Russian Munitions Mission in London. As we motored north we passed near Potter's Bar the wreck of the Zeppelin which had been brought down in flames the night before. It was not far from the main road, and was still smouldering when we saw it, though the charred corpses had already been removed. A week later I convoyed some members of the Italian Mission. An opportunity to view the Tanks was a courtesy extended to the representatives of our two Allies, but no more. There did not appear even then to be any hope of the Russians being able to build these machines and but little chance of the Italians doing so.¹

* * * * *

Meanwhile a few Tanks again went into action. On the 25th and 26th of September thirteen attempted to advance across ground which shelling and rain had rendered impossible even for them. Nine were bogged in shell-craters, two reaching Thiepval before a similar fate befell them; but on the former day one accomplished a feat which has been described as the first "star turn in the history of Tank tactics." I make special reference to it because it showed what under favourable conditions a Tank could do in the way of saving life, time, and effort, and had a most encouraging effect both on the Heavy Section and the Army generally. When our infantry were held up by a strongly held trench 1,500 yards long one female Tank came to assist.² Moving along the trench this machine, with the help of a low-flying aeroplane, killed many of the enemy, captured eight officers

¹ The latter, however, did commence the construction of Tanks, though none was produced until after the War.

² The Gird Trench near Gueudecourt.

and 362 other ranks, and in less than an hour enabled our infantry to advance across the open and occupy the trench. Our casualties in this operation amounted to five all told.

This event alone, it might be thought, would have opened the eyes of every one once and for all—at least to possibilities. Nevertheless, even twelve months later in the Army in France there were still sceptics whose opinions carried weight.

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The employment of a small number of Tanks during the Somme Battle was against the advice of those who had given most thought to the potentialities of the New Arm. So far I have seen nothing to justify it, and personal inquiries have produced a similar negative result. No explanation is to be found in Sir Douglas Haig's published dispatches.

To me the decision to give away the secret which had been so carefully kept for months and to squander the opportunity of a surprise was the more inexplicable, since both the Commander-in-Chief and his Chief of Staff had expressed their agreement with my memorandum—in which this course was specifically deprecated. It seems to have been brought about by disappointment at the lack of decisive results and the losses of the first days of the Somme offensive, and a desire to encourage our somewhat disheartened troops.

That it should have been possible is, I think, to be attributed to a great extent to our tendency to ignore in practice what we preach in theory. The supreme value in war of the "element of surprise" is proclaimed almost *ad nauseam*. It is as much of a *cliché* as the apophthegm upon which it was based—that the moral is to the physical as three is to one—and as hackneyed as the inevitable association in official military literature of the adjective "vigorous"

with attack and pursuit. Yet in the whole military art there is probably no precept to which we actually pay less attention.¹ And in this we are not alone.

The majority of our higher authorities who have written about the War have not referred to this premature use of the Tanks. But various reasons have been put forward by lesser lights for the decision of the Commander-in-Chief thus to throw the New Arm into battle. One is that the secret of its existence could not have been kept much longer, that even before the 15th September the Germans had some inkling of the surprise in store for them, and that it could have been only a matter of time before they obtained complete information and evolved a suitable reply. Naturally, the secret could not have been kept indefinitely, but that was not sufficient reason to assume that the enemy—even if he did suspect something—would have been able to organize effective counter-measures before the whole number of Tanks then being made had entered the field. A second reason is that there was leakage at home; that it was discovered through the censorship that a person who had seen the Tanks had sent full information to correspondents in neutral countries; and that a similar danger of betrayal had revealed itself in letters from the armies in France. This statement needs further substantiation. I heard nothing of such leakage, except in the cases I have cited, and know of no other precautions having been taken to stop those revelations at their source.

It is contended, also, that nothing but actual experience in battle can fully disclose both the strength and the weakness of a new invention; that it was better to use the Tank in its existing numbers, before the whole

¹ Cf. the attack on Tanga in German East Africa, the premature bombardment of the Turkish coast-defences of the Dardanelles in November, 1914, and our action after the landing at Suvla in August, 1915.

resources of the factories were committed to the current design ; that the fighting about to begin was no small battle, and that even the few Tanks available might have given potent assistance to the assault and have saved many valuable lives.

It is obvious that the only conclusive test of a new thing is its actual use. But in war that should be the final test, for there are in fact many sides of an invention which can better be tried—and in the case of secret inventions ought to be tried—beforehand, and not in the heat of action. Most, if not all, of the technical faults of the original Tanks could, and would, have been discovered on the experimental training-ground, had time been allowed before these machines—the first of their type—were flung into battle. As it was, some defects were remedied. And there was no question of committing the whole resources of our factories to this particular design. The fact that the action in which the Tanks were to play a part was no small battle but part of a gigantic operation, renders the more insignificant the contribution that could possibly have been made by fifty, even had they all succeeded beyond the dreams of the “ enthusiasts.”

No doubt—as some claim—experience was badly needed in the tactics to be followed by the Tanks and in their co-operation with infantry and artillery. But by September, 1916, there had surely been sufficient practice in the fighting of all the other Arms on the Western Front, to render feasible a reproduction of most of its essential elements in some form of combined training in which the part to be played by the New Arm could have been fitted and rehearsed. For this a battlefield—as perfect as anything short of the real thing could be—was all ready in England. But time was not allowed for full advantage to be taken of it. Actually, the tactics evolved after such trial as was possible by those who alone had given the matter continuous thought, were disregarded in France.

The method of attack at first employed in the field was devised at G.H.Q., and so far from the lessons of the 15th September being learned and applied, it was not until fourteen months later that these tactics were abandoned and those originally recommended followed.

It would seem, after consideration of all the arguments in its justification that have been advanced, and after making full allowance for the perplexing problem facing those who had to make the decision, that the *début* of the Tanks was an error of judgment by reason of the gulf which lay between the utmost that could have been achieved then and what might have been gained by waiting. With the example before us of the stupendous mistake of the Germans in first releasing gas over a short sector, we, sixteen months later, with our eyes open, committed a similar error. We threw away a surprise. We discounted a possible great coup in the future for the slender prospects of a small immediate gain, in the vain hope of resuscitating the momentum of an offensive which had died away. How remote this hope was can be gathered from the comments of the Official Historian on the first part of the Somme offensive :—

“The opportunity for success on the Somme rapidly passed and in little over a fortnight disappeared; the enemy fully aware of his danger, brought up fresh troops and just as many new batteries as the whole of the British. The battle, without any element of surprise—except the vain appearance of a few tanks and the greater use of gas—or strategic advantage, became a ding-dong struggle of attrition, in spite of the experience gained on the 1st July and duly applied.”¹

Possibly the motive was accurately described by General Rawlinson :

"The Chief is anxious to have a gamble with all the available troops about September 15th, with the object of breaking down the German resistance and getting through to Bapaume. . . ." ¹

Mr. Churchill writes :

"To achieve this miniature success and to carry the education of the professional mind one stage further forward a secret of war which, well used, would have procured a world-shaking victory in 1917 had been recklessly revealed to the enemy." ²

In regard to this matter of education, there can be adduced the view of the only officer of those able to speak both of what was intended and what was done who has expressed an opinion. He was associated with the Heavy Section during its formation, and fought with the Tanks from November, 1916, to the end of the War. ³

"Thus we see that no material lesson was learned from this early employment of a small number of tanks as regards their mechanical design. The minor alterations which were incorporated in the Mark IV Tank would have come to light with a little more training behind the front.

As regards their tactical employment, this was so obviously wrong in September, 1916, and the original proposals by Colonel Swinton proved to be so eminently sound, that no claim can be made that any tactical lessons were learned in this first trial.

As regards the claim that no Commander would have been justified in risking the use of these machines in the manner proposed by Colonel Swinton without a preliminary trial, this is, of course, purely a matter of opinion. Such risks

¹ *The Life of General Lord Rawlinson*, Major-General Sir F. Maurice, p. 170.

² *The World Crisis*, Vol. III, p. 186.

³ *In the Wake of the Tank*, Lieutenant-Colonel G. Le Q. Martel, D.S.O., M.C., R.E., p. 11.

have been taken in the past with overwhelming success, and it is now tolerably certain that a great success would have been attained if the risk had been taken in this case. Possibly the duration of the war might have been shortened by over a year."

Again to quote the Official History ¹ :

"To divulge our new methods whilst attacking with insufficient means was to squander possibilities of surprise, just as much as the first effect of gas was wasted by the Germans at 'Second Ypres,' and the first effect of tanks was thrown away at the Somme in September, 1916."

¹ *Military Operations, France and Belgium, 1915*, vol. ii, Preface, p. vi.

The Caravan Passes on.

[October, 1916]

ON the 4th October I paid another visit—the last, as it turned out, on Tank business for nearly two years—to the Front.¹ At advanced G.H.Q. I found Elles, who a few days previously had been appointed to command in France, with a staff of four new officers.

Establishments were being framed for what was now to be a corps of nine battalions, four to be raised in France from the four companies of the Heavy Section out there, and five in England from the two companies still at home. So far I had heard this scheme only vaguely outlined. The centre of gravity of the whole thing seemed to have swung over to G.H.Q., which was assuming control and working out the organization for the expanded unit. For me it was a puzzling and embarrassing situation. Possibly I was not very discerning, but I did not in fact realize what was happening until I was taken aside by an officer and told in confidence that he had heard that I was to be superseded. In a certain circle the cry—or as yet, to be accurate, the whisper—had gone round, “Swinton must go.” Then I understood, but could take no action, because my information had been confidential. I was in any case under the War Office and, as had been so carefully impressed on me

¹ In September, 1918, I was again in France as a member of the Tank Board.

from the beginning, not a member of the B.E.F., France. All I could do was to carry on

My views were asked by the Artillery Adviser at G.H.Q. as to the best way of meeting an attack by Tanks, should the Germans use anything similar against us. I told him what I thought, and put my considered opinion in writing, that the proper answer to the Tank was another Tank. It may be of interest to give the reasoning which led to this conclusion. The employment of land-mines, admittedly a two-edged weapon, being eliminated, the greatest enemy to the Tank was the field gun or Q.F. gun of smaller calibre; for a direct hit from such would dispose of the existing machine, which had bullet-proof protection only, or of any type likely to be evolved for some time. Theoretically, preparation to meet a sudden Tank attack by the Germans at any point postulated field guns distributed at short intervals along the whole of our front. This would entail the provision and locking-up of a prohibitive amount of artillery, and was out of the question. But since no such blow could be delivered without some warning, the practical alternative was to have a smaller number of light mobile guns so placed that they could be rushed to a threatened sector at short notice. If they were to be pushed right up—which was presupposed by the necessity for direct fire against moving targets—they would need to be power-driven and not horse-drawn, and bullet-proof protection would have to be provided for the personnel. For movement across country—which was also essential—the caterpillar track was the only known means of propulsion. These three requisites—motor-power, bullet-proof protection, track-propulsion—really amounted to the specification for a Tank. Future developments with a view to combats between machines would lead to a continuation of the old duel between guns and armour. As to size and weight, the dimensions of the existing

machine had been strictly limited by the exigencies of rail transport; but even if the latter could be ignored, there were other limitations in these directions.¹

On Sunday, the 8th, I returned to London considerably depressed by what I had reason to suspect. Once again did my passage across the Channel mark a crisis—this time in my personal affairs alone.

* * * * *

After a series of small happenings—trivial in themselves but sufficient to show which way the wind was blowing—I learned from Hankey over the telephone that I was not to remain in command of the Heavy Section. His indignation was great, and he had not hesitated to give expression to it in high quarters. He was anxious that when free I should return to him at the War Cabinet Secretariat. Elles, who was with me at the time, informed me that he had known what was brewing, but of course had had no hand in it, and had been in a most uncomfortable position. To my question as to who was responsible, which I did not then know, he returned no answer.

I thought it best to go direct to the Chief of the Imperial General Staff, to whom I reported what I had heard, asked if it were correct, and if so, the reason. General Robertson's reply was to the effect that France wanted a big expansion of the Heavy Section and that I was not considered the man to carry it out. He added that it had not been decided who should take my place, but that I should be relieved in due course. His parting words, that I had

¹ Since this was written in October, 1916, experiments have been, and are now being, carried out with a view to the production of an anti-Tank weapon, especially for the infantry. But the solution of the problem, which has not yet been reached, will, I still think, lie in the direction then pointed out.

done very good work and he hoped that I should get some recognition were, in the circumstances, somewhat bewildering!

As I walked down the passage of the War Office, bereft of my child, consolation came with the thought that the child was waxing strong.

"The dogs bark, but the caravan passes on," runs the Persian proverb. In this instance the caravan moved on caterpillar tracks.

The following morning, in response to a note, I called to see the Deputy Chief of Staff, who informed me that the C.I.G.S. had instructed him to see me, as it was realized what my feelings must be.

I was told that "France" was difficult and did not consider me the man to be in charge of the expansion of the new unit. And I received the only explanation which has ever been vouchsafed to me as to why I was being "cold-shouldered"—as General Callwell puts it¹—namely, that the proposed expansion was in reality a routine matter, which could be carried out by any good "Q"² officer, and it was considered that I ought to be released to resume my important duties at the War Cabinet Secretariat. I was to carry on until relieved, and I obtained a promise that Brough should be sent back to France with no bad mark against his name.

* * * * *

But it was a more fateful moment than I knew. On the horizon of the Tank cosmos had momentarily loomed a change of vastly greater significance than the supersession of any individual. We know what the Commander-in-Chief said on the 15th and 17th September; that four days afterwards a conference held at the War Office approved his demand for 1,000

¹ *Experiences of a Dug-out*, 1914-1918, by Major-General Sir C. E. Callwell, K.C.B.

² A "Q" officer is one responsible for administrative duties.

Tanks ; and that orders starting the production of these machines were sent out at once. On the 10th October—exactly three weeks later—when the wheels had begun to go round and production had got well under way, the Army Council for some reason cancelled this demand.

Luckily Stern, who was responsible for supply and the placing of orders with the manufacturers, was an independent man of vision and of forceful character. He at once represented to the Secretary of State for War—Mr. Lloyd George—the impossibility of reversing all the machinery of production that had been set in motion, and refused to attempt it. On the following day Mr. Lloyd George, without whose knowledge the Army Council had acted, had the cancellation withdrawn.¹

The caravan passed on.

¹ *Tanks, 1914-1918*, p. 108.

CHAPTER XVI LAST DAYS WITH THE HEAVY SECTION

The Assistant Secretary once more

[October–November, 1916]

I NOW had to carry on until my successor was appointed. The nature of the work did not change, but with the departure of "B" Company, the last of the four to go over to France, the extreme strain eased off. As Tanks came to hand, the training of the two companies left at home was continued. The question of stores, spares, and equipment generally was very complicated and still demanded a great deal of attention.

Preliminary steps were taken towards the move from Elveden to Bovington. At home there was to be a Training Headquarters, and in France a Fighting Headquarters, each with a full establishment of regular officers; and measures were set on foot for the raising of the five new battalions.

* * * * *

The question arose of sending some Tanks out to Palestine. So far as I knew, a large part of that theatre was suitable for them, and they would, I thought, be of great value tactically. Whether they would be able to operate in the desert could be ascertained only by experience, and would depend on whether the dry sand cut their moving parts to pieces. To minimize the chance of this I recommended that they should be carried right up to railhead, and then driven under their own power, if possible, along the seashore, where

the sand would be damp and firm, to their battle station.

Eight partly worn machines—a quite inadequate number—were sent out to Egypt in December, and when they first took the field, at the second Battle of Gaza, they had actually to travel several miles across country on their own tracks before they went into the fight. They acquitted themselves well, and the assistance even of this small number was found very valuable both at this time and at the third battle. I afterwards learned to my chagrin that *Ole Luk-Oie*—the machine christened after me—developed cold feet—in other words, was badly ditched—and refused to perform.

As had been the case in France, a fine opportunity was lost by the use of so small a number of machines. This was strongly felt by many of the Heavy Section officers on the spot, and even as late as August, 1917, I personally received urgent requests that more should be sent out. Comparisons were drawn between the eight Tanks distributed over an 18-mile front in Palestine and the seventy-two available on a 4-mile front at Messines. One officer, waxing lyrical, wrote: "The amusing spectacle of eight hornets attacking a haystack bristling with death might appeal to a visionary suffering from *delirium tremens*; but in reality such a venture degenerates into a flea-bite!"

That the best possible effect was not obtained even from the machines available was due in part to the prevailing ignorance as to their powers and role; but in any case no great result was to be expected from so few. And any chance that there might have been of their appearing as a surprise must have been eliminated by the more or less public display of them at Alexandria. Late in 1917, as an example of their masterly employment I was told that one machine had been sent out on reconnaissance, escorted by a detachment of the Camel Corps. Even if believed in

by the narrator, this story was probably untrue. But he was almost hurt by my retort that one might as well escort a fighting armadillo with poached eggs!

When writing to the War Office in October, I had made some suggestions as to appropriate camouflage for enhancing the moral effect of the Tanks on the occasion of their first appearance, even though the Turks might have been aware of their existence. There were only two copies of my letter. My surprise can be imagined, therefore, when eight years afterwards there appeared in an Austrian military and technical journal¹ the following:

“BREVITIES

GREAT BRITAIN

BRITISH PROPAGANDA AGAINST THE ENEMY

To propaganda against the enemy also belongs an interesting proposal which Colonel Swinton of the British Tank Corps made in the beginning of 1917 (*sic*), when the question arose of sending Tanks to Palestine. As is known, some eight heavy Tanks, Mark IV (*they were in fact Mark I*), took a leading part in the second and third Battles of Gaza. Colonel Swinton decided, in order to increase the expected moral effect on the still credulous Turk, to paint the Tanks not only with frightful faces, but to cover them with texts from the *Koran* with corresponding value. Unfortunately, this original and instructive idea was not carried out (as is well known, the *Koran*, as well as some parts of the Old Testament, lends itself to reading aloud and quotations). It is open to question, however, whether the contemplated painted inscriptions of many characters would have had the effect hoped for on the Turkish soldiers, and whether the still-undepressed Turkish officers might

¹ *Militärwissenschaftliche und Technische Mitteilungen*, of September–October, 1924.

not have been enabled to incite their soldiers to further efforts and to raise their *moral*."

This article was not quite accurate, though sufficiently so in its main lines. The "frightful faces"—which I certainly did suggest and which were actually painted on some of the machines—were to be those of Djinns, or Afrits, my conception of the enemy mentality being based more on recollections of the *Arabian Nights* than knowledge of the modern Turk. But, in any event, it is still a mystery to me how the writer got his information.

* * * * *

My last official act before I finally faded out of the Tank picture was in the nature of a protest. Heavy Section Headquarters in France, advised by an officer who was a new-comer to the Tanks, pressed for the substitution of the Lewis gun for the Vickers and Hotchkiss guns in all existing and future machines. Naturally, in common with all the other new-comers, he was entirely ignorant of the past history of the unit and of the many things which had already been tried and rejected. The Lewis gun was not a machine gun—in the strict sense—any more than was the Hotchkiss. When the Tanks were originally designed it had been carefully considered and tested, and had been advisedly discarded as unsuitable. I therefore wrote, strongly deprecating the proposal, and gave my reasons. Nevertheless, the change in armament was carried out at the beginning of 1917 at great cost and with much expenditure of time and labour. It was speedily found to have been a mistake, and at still further cost the Tanks were re-armed as before.

* * * * *

At the beginning of November, my successor having been appointed, I said good-bye to those of my Command still in England—amounting to some sixty

officers and 700 other ranks—and wished them God-speed.

General Anley,¹ who had been transferred from the command of an infantry brigade, was to succeed me. I took him down to Elveden, and introduced him to the Heavy Section and the Tanks. Next day I returned to my duties at the War Committee.

¹ Brigadier-General F. Gore Anley, C.B., C.M.G.

EPILOGUE

November, 1917—October, 1918.

AFTER the 9th November, 1916, my connexion with the Tanks ceased.¹ During the last two months of the year and the first six of 1917 they were employed in different offensives, with good effect. In June, 1917, a greater number took part in the attack on Messines; but on that occasion our mines and intensive bombardment rendered their co-operation hardly necessary. As well as was possible I followed up all their operations, especially the part played by them in the Battle of Passchendaele (Battles of Ypres, 1917) which began on the 31st July, 1917. Much has been written in condemnation and something in justification of this offensive. But, whatever arguments may be advanced to justify the general policy of the prosecution of this disastrous operation, nothing can be said in defence of the fatuous employment of machines, weighing over thirty tons, in the liquid mud of what degenerated into a swamp battle, or of the subsequent and equally fatuous condemnation of them for not functioning well under these conditions.

When in September of that year I left England for a short visit to the United States² there was every

¹ Nearly two years later, in September, 1918, subsequent to the period which is covered by this narrative, I renewed my association with them, being appointed a member of the Tank Board in London, a body which controlled the whole question of their design and supply.

² I accompanied Lord Reading [now the Marquess of Reading, P.C., G.C.B., G.C.V.O., G.C.S.I., G.C.I.E.] on his second mission to that country.

prospect of the Tank Corps—as it was then called—being abolished because no more than the infantry had it been able to achieve the impossible.

* * * * *

I reached home again on the 11th November, to find on all sides an atmosphere of deep depression. The failure of the French offensive on the Chemin des Dames, the defection of Russia, Passchendaele, with its grisly tale of slaughter, the air raids in the South of England, and, finally, the recent Italian *débâcle* at Caporetto were exerting their cumulative effect. Privation, no less than grief and anxiety, accounted for the wan faces to be seen on every side. Though means had been found to cope with the U-boats, the ill-nourished population was still suffering from the influence of their depredations, and was less resilient than it had been. Three years of prolonged strain seemed to have brought the end of the struggle no nearer.

As I drove down the dimly lit Old Kent Road to my home in Blackheath in the murky drizzle of that November evening the full grimness of the situation was borne in on me. I contrasted what I saw with the material well-being and buoyant optimism of the country I had just left, which as yet had tasted none of the suffering of war. Glad as I was to be back, my home-coming was in no sense a joyous one. It was a plunge from the midst of ignorance, exaltation, and enthusiasm into the sombre gloom of stark reality. Beneath the pervading depression there lay a fixed determination to see it out and to finish the thing once and for all, whatever the cost. But hope long deferred sorely needed some heartening sign.

* * * * *

A day or two later I happened to meet my former second-in-command of the Heavy Section, who was still serving in France. He confided to me that the

Tank Corps, whose continued existence had been in jeopardy, had been given a fresh lease of life, and that at the urgent instance of the Corps Headquarters a great push was under preparation on the plan I had outlined over a year and a half previously. It was to be a surprise Tank attack on a large scale without any preliminary tell-tale bombardment. My feelings on hearing this news were mixed. It recalled to me vividly my early efforts to bring about such employment of the New Arm. For a year I had been unable to keep in close touch with those commanding it in France. Yet I was aware that they had continuously pressed for its use in a more enlightened manner than had hitherto been favoured. My experience caused me to wonder whether even now—in spite of the lessons of fourteen months—it would be rightly employed, and, if so, whether measures would be taken to reap the advantage gained. Of the Tank Corps itself I had no doubts.

On the afternoon of the 20th I was at work at the Cabinet Secretariat when Hankey rang up and asked me to look in and see him. When I did so he burst out with the news that a great offensive had been carried out that morning at Cambrai; that it had been a surprise attack by some 400 Tanks; that we had advanced to a depth of from 8,000 to 10,000 yards on a 12,000-yard front, capturing about 8,000 prisoners and 100 guns, with practically no loss.¹ Greatly elated, he added that he would have my

¹ At Cambrai we gained in a few hours approximately the same extent of ground as we had taken three months to win at Passchendaele at the cost of 400,000 casualties and scores of millions of pounds worth of artillery ammunition.

For comparative statistics as to cost in combatant and economic man-power, money, transport, and time, of various actions, see, *The Mechanization of Warfare*, by General Fuller, in *What would be the Character of a New War?* the English edition of the result of an enquiry in this subject carried out by the Inter-Parliamentary Union, 1931.



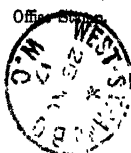
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CAK.

4.10.17

Received at

M.

Colonel Sir John Swinton
of Imperial Defence Force
G618 26 a.m. all ranks
Thank you and your
Shots
to (love)

E 1251.

TELEGRAM SENT TO COLONEL SWINTON AFTER THE BATTLE OF CAMBRA
ON THE 20TH NOVEMBER, 1917, BY BRIGADIER-GENERAL H. J. ELLES,
COMMANDING THE TANK CORPS IN THAT ATTACK

memorandum reprinted and a copy sent to each member of the War Cabinet.

I rejoiced at this news. At last our terrible enemy—the German machine gun—was beaten! But my transports were restrained. I was looking ahead—trying to appreciate the actual situation. My face must have betrayed my thoughts, for Hankey continued:

“What’s the matter? You don’t seem too pleased.”

“I’m pleased all right,” I answered, “but I’m wondering. I bet that G.H.Q. are just as much surprised by our success as the Boche is, and are quite unready to exploit it.”

This was the afternoon of the First Day of the First Battle of Cambrai. Of what had actually happened I then knew no more than I had just been told. I was backing form. History has shown how correctly.

Dubious as I might have been about the future, I was overjoyed that at last the New Arm had had a chance to prove itself and had achieved such immediate and overwhelming success. I telegraphed my congratulations to Elles, then Brigadier-General, and to the Tank Corps which he had had the supreme privilege of leading into action. His reply—

“All Ranks thank you. Your show. Elles.”

—is one of my cherished possessions. But over and above all that it meant to me, the message did honour to the sender, who in his hour of triumph was big enough to share his laurels.

On the morning of the 21st November, 1917, the joy bells of the City of London rang out for the first time during the Great War. This was a measure rather of the emotional strain under which the nation was labouring and of the hunger for some success than of the actual extent of the victory gained.

That our jubilation was short-lived was not due to the Tanks, which had more than vindicated the claims of those responsible for them. The cause was to be

found largely in the disbelief of G.H.Q. in the New Arm and the consequent unreadiness and failure to seize the opportunity created by its use. This was followed by the clever surprise counter-attack of the enemy on the 30th, which should not have taken us unawares.

* * * * *

Nine months later, on the 8th August, 1918, dawned the "Black Day of the German Army in the History of this War."¹ This was the date of the Battle of Amiens—a repetition of that of Cambrai on a much larger scale, carried out as a definite step in a strategic scheme. It was led by the advance of a slightly greater number of improved Tanks, to which was assigned a properly orchestrated part in the tactical plan.

* * * * *

On the morning of Wednesday, the 2nd October, 1918, to the Supreme Command of the German Army, once the most powerful fighting machine the world had ever seen, fell the bitter duty of announcing to the Party Leaders in the *Reichstag*:²

"... there is, in all human probability, no longer any prospect of forcing the enemy to accept peace.

Decisive for this conclusion are two factors: the Tanks. . . ."

¹ *My War Memories, 1914-1918*, by General Ludendorff, p. 679.

² *Official Records of the Events leading up to the Armistice, 1918* (*Ämtliche Urkunden zur Vorgeschichte des Waffenstillstandes, 1918*), Berlin, 1924, p. 29.

Secret.

APPENDIX

THE PRESENT AND FUTURE SITUATION REGARDING THE PROVISION OF CATERPILLAR MACHINE GUN DESTROYERS OR "LAND CRUISERS"

AS originally arranged by Mr. Churchill, when First Lord of the Admiralty, and subsequently confirmed by Mr. Balfour and by an Inter-departmental Conference of the Committee of Imperial Defence, which sat on the 28th August, the designing and experimental construction of a type of the above machine is being carried out by a technical Committee under the chairmanship of Mr. T. d'Eyncourt, C.B., the Director of Naval Construction. (This Committee was for some time known as the Admiralty Landships Committee, but for purposes of secrecy it is now called the "D.N.C.'s Committee.")

2. As regards design, this Committee has been working upon a machine to fulfil the requirements of the War Office, and a conference of representatives from all the Branches or Departments concerned assembled on the 29th September to settle certain points as to armament, capacity, speed, protection, etc. Since then there have been signs that the nature of the German defence organization has been developing in a direction which might necessitate the provision of armoured protection against H.E. shell from field guns or other Q.F. artillery of small calibre (instead of the bullet-proof plate previously alone considered necessary), and the War Office are taking steps to elucidate this point and to ascertain by experiment what the nature of the armoured protection must be.

3. So far as the design is concerned, therefore, the matter is in train, and is being pressed on as fast as possible. But so soon as a suitable machine has been evolved, probably in the course of a very few weeks, in accordance with the arrange-

ments between the First Lord of the Admiralty and the Minister of Munitions, and with the recommendations of the Conference of the 28th August, the D.N.C.'s Committee will hand over the perfected machine to the Ministry of Munitions as a type for supply. Three questions will then at once arise :

- (a) That of the supply of the machines in bulk (including armament) ;
- (b) That of providing and training the personnel to man the machines ;
- (c) That of finance. (Up to this point the whole of the cost of the experimental work, including the payment of all those employed on it, will have been defrayed by the Admiralty.)

4. *The Supply of the Machines.*—A scheme for doing this was outlined by the Conference of the 28th August. It was recommended that it should be carried out by the Inventions Department of the Ministry of Munitions, assisted, so far as technical labour in construction is concerned, by a number of officers and men (up to a total of 600) who were to be specially engaged for the construction of these machines (and the subsequent manning of them). As many of these men as possible were to be re-engaged from those recently disbanded from the Squadrons of the R.N.A.S., and added to No. 20 Squadron, R.N.A.S., which still existed and was employed on experimental work. It was suggested that this should be done by the Trench Warfare Department of the Ministry of Munitions, and, in order to obtain these men before they were entirely dispersed, it was recommended that steps should at once be taken in the matter.

5. In the light of further experience it seems that this procedure will not meet the necessities of the case, and will have to be modified—

Firstly. It is doubtful if, when the experimental work ceases, the matter should be taken over by the *Inventions Department*, since the inventing and designing part of the work ought by then to be complete. It seems rather that the work remaining to be done will amount to the supply of an approved article, such as will fall within the scope of the Supply Department of the Ministry of Munitions.

Secondly. The Trench Warfare Department has not carried

out what was suggested regarding the collection of men, and the only body yet organized which contains officers and men of the required stamp is the original No. 20 Squadron, R.N.A.S., which is still maintained by the Admiralty. On the completion of the experimental work by the D.N.C.'s Committee this Squadron will be disbanded and its officers and men allowed to exchange to other Services, or to retire, unless steps are taken to retain them. (Its members are under the impression that they will be taken on to man the Caterpillars when the latter are ready, and their retention is now a matter almost entirely connected with the manning.)

Thirdly. Apart from the fact that the Trench Warfare Department has for some months past furnished a ground for the trial of the Caterpillar, and has utilized the services in experimental work of the officers and men of No. 20 Squadron, R.N.A.S., that Department does not really seem to be much concerned in the matter if (as is now suggested) the Supply Department be made responsible for the actual provision of the machines to the army; and (as will be suggested) the War Office is to be responsible for the raising and training of the personnel to man them.

6. To avoid delay it is thought that the question of supply should be reconsidered in the light of these facts, and that a definite scheme for it should be clearly laid down before the necessity for action arises. To whatever Department the production of the Caterpillars is finally allotted, it is suggested that it be entrusted to one business man of proved capacity, preferably one who has been connected with the experimental construction up to date. He should be assisted by a small committee of experts which shall have plenary powers and be employed *de die in diem* on this work alone. The question of manufacturing facilities has been carefully studied by the D.N.C.'s Committee, in order, by looking ahead now, to arrange beforehand for them amongst the numerous competing demands for the output of munitions of all kinds.

7. *Personnel.*—As will be gathered from the above, the scheme recommended by the Conference of the 28th August for the collection of a body of officers and men for manning (as well as for constructing) the Caterpillars, has, to a great extent, fallen through. It seems also, that since the Caterpillars will be used by the army, the provision of the personnel

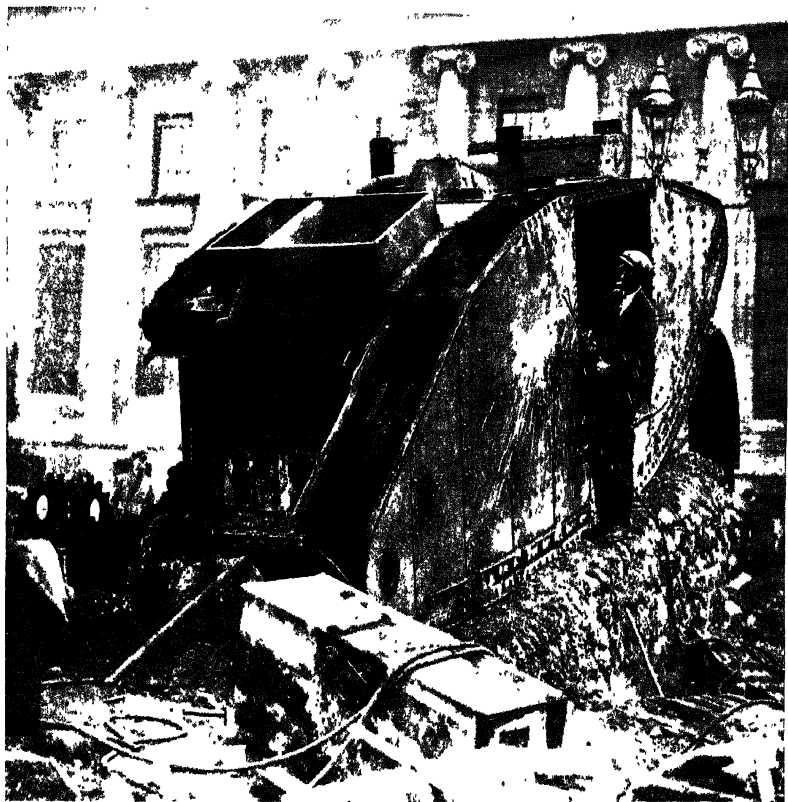
will be the duty of the War Office. As was pointed out in the report of that Conference, this will necessitate the enlistment and special training of special officers and men of technical qualifications, each of whom will have to perform the duties of a mechanic, an expert motor driver, and a Q.F. and machine gunner. It will be no easy matter to obtain men of this class, and they will have to be formed into a corps of specialists much of the nature of the machine-gunners of the German army. It is suggested, therefore, that the preliminary work in connection with the organization, establishment, payment, and terms of service, etc., of such corps be at once undertaken, and that inquiries should be set on foot now as to the officers and men of the type required, so that if the scheme of employing not less than — Caterpillars is adopted there may be some chance of having officers and men ready to be trained in handling the machines.

8. In this connexion, it seems that the present No. 20 Squadron, R.N.A.S., will form a very useful nucleus for the formation of the corps, if its members are transferred from the navy to the army. It is believed, also, that there is an excess of personnel in the number of the R.N.A.S. which has been employed in the anti-aircraft defence of London, and that some members of this corps may be transferred from anti-aircraft duties to Caterpillar duties, if they are of the right stamp.

9. *Finance*.—The costs of the provision of the material will, it seems, naturally fall upon the Munitions Vote, while the cost of upkeep and the pay of the personnel to man the machines will be borne by the War Office, neither of which Departments has, up to the present, been put to any expense in the matter.

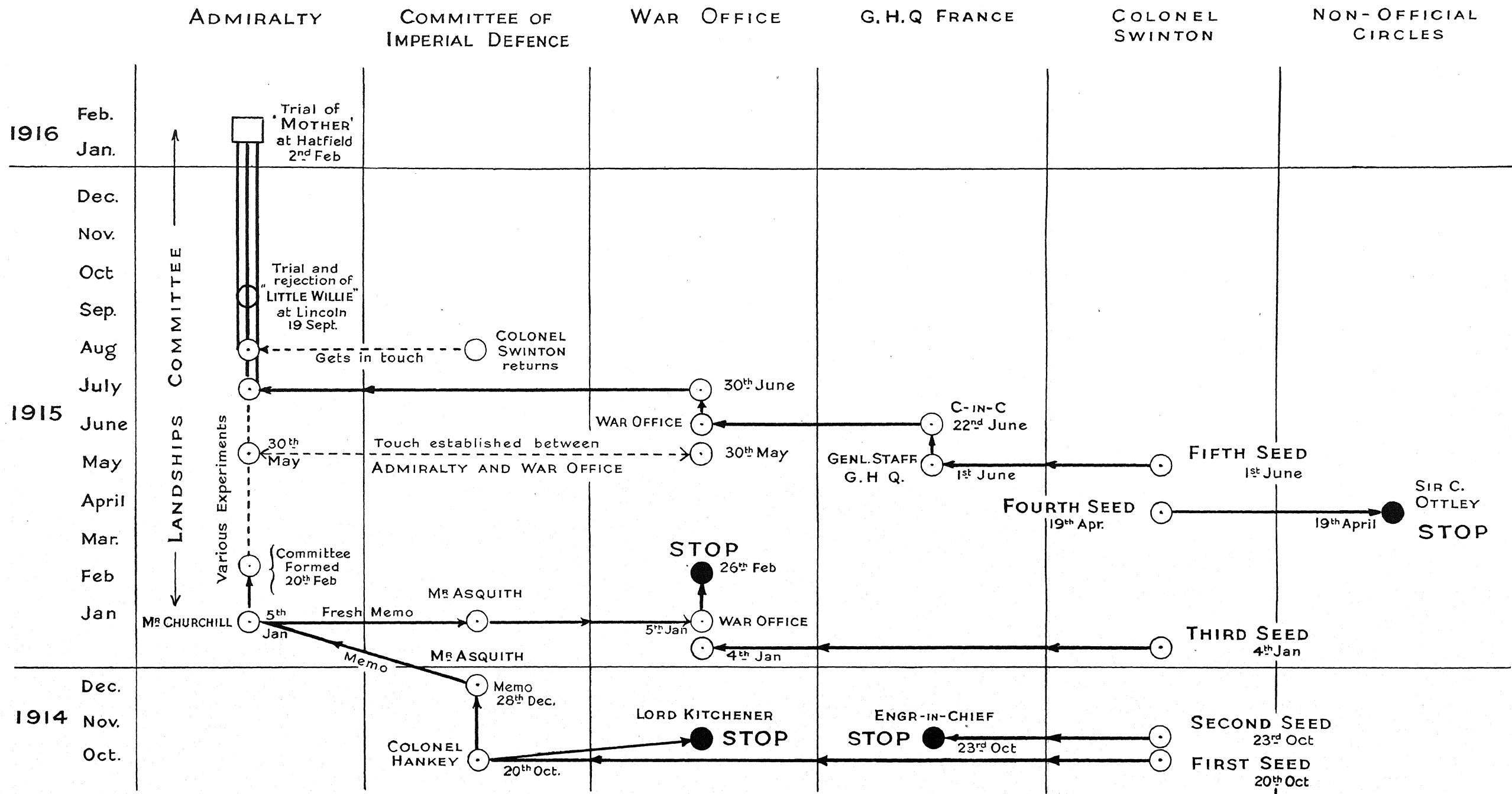
E. D. S.

December 17, 1915.



THE LAST OF "THE FIGHTING TEMERAIRE "

THE TANK BEHIND THE BRITISH MUSEUM BEING DEMOLISHED IN FEBRUARY, 1931



N.B. The word 'STOP' shews where the Seed died

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